THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
June 3, 1991 · Vol. XXV · No. 22 · 144 Pages · $2/Copy · $48/Year

COMPUTERWORLD

1-2-3 facing uphill climb in Mac world

BY CHRISTOPHER LINDQUIST
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. is scheduled to announce this week that 1-2-3 for the Apple Computer, Inc. Macintosh is being beta-tested — 43 months after it was first announced to be in development.

Users who tested the product were upbeat about its functions, but interviews with longtime Macintosh users indicated that Lotus will have a tough time peeling away Microsoft Corp.'s grip on the Macintosh spreadsheet market.

At briefings last week, Lotus said 1-2-3/Macintosh, which the firm had first talked about in October 1987, is expected to ship this fall. It will include full file, data, macro and keystroke compatibility with versions of 1-2-3 for other platforms. The $495 product will also include support for the new System 7.0 Macintosh operating system.

> "PEOPLE WHO KNOW Excel aren't going to switch unless there is tremendous increased functionality."
>
> GEORGE BRENNER
> MCA

Alpha-testers of the product were clearly impressed. "It looks like a real Mac product," said Michael Steenberge, director of information services at Corning, Inc. in Corning, N.Y., and an alpha-test user. "I've seen very few products [that] come from the DOS world go directly, first time out, onto a Mac and look like a Mac product."

Continued on page 8

Technology builds a better sub

BY MARYFRAN JOHNSON
CW STAFF

NEWPORT NEWS, Va. — Corporate computing at Newport News Shipbuilding has always maintained a low public profile, in keeping with the shipyard's highly classified work of making nuclear submarines.

That tradition is changing these days as rapidly as the technology itself, which was employed in the design of the U.S. Navy's Seawolf nuclear submarine.

The results of a massive modernization of information technology at the century-old shipbuilding company have attracted cabinet-level attention from the federal government. Executives at Ford Motor Co. and leading aerospace firms have also come calling on the shipbuilder for information.

The star of the show is the shipyard's grand-scale use of computer-integrated manufacturing and Computer-aided Aquisition and Logistics Support, or CALS, to streamline the complex task of ship design, construction and maintenance.

"We have had a complete turnaround in the use of technology to be competitive," said Larry E. Kittelberger, director of corporate computer services. "We went about this by re-examining our technology needs, establishing an architecture and developing or acquiring the necessary tools to make it happen."

As the first submarine to be designed 100% electronically, Seawolf is a prime illustration of a real-world use of CALS.

CALS is the U.S. Department of Defense's standards initiative, which requires contractors and

Continued on page 135

IBM pledges to improve LAN control

BY ELISABETH HORWITT
CW STAFF

RALEIGH, N.C. — IBM is planning a series of introductions throughout the rest of this year that will address the needs of information systems departments and help them administer and manage their exploding local-area network installations more effectively.

In recent interviews, IBM managers said the rollout will add some key systems management capabilities to IBM's two-tier network management structure, in which OS/2 servers can locally manage LANs on their own and can also act as control points for a central Netview host that oversees the entire corporatewide LAN installation.

"The idea of getting LAN information to a single point for review and monitoring is very important to us," said Steve Bortnyk, director of network management at Metropolitan Life Insurance Co., who has been briefed on several of the upcoming products by IBM.

Key announcements

One key group of upcoming announcements will detail products that allow Netview to configure, troubleshoot and collect alerts about LAN systems such as file and database servers. While Netview can already troubleshoot network boards and other LAN devices through its link with IBM's LAN Network Manager, users have been clamoring for tools to monitor and control the systems that support their critical LAN applications.

Upcoming products will set up two-way links between Netview and three IBM OS/2 server offerings: LAN Server, Database Manager and Communications Manager.

The server software will be able to send systems

Continued on page 6

Olsen seeks lead role in open systems

Products, marketing to stress integration

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Staking his company's future on systems integration and enterprisewide networking, Digital Equipment Corp. President Kenneth H. Olsen briefed analysts last week on a strategic campaign aimed at shedding DEC's reputation as a proprietary vendor.

Analysts who attended a preview of today's announcement said Olsen lumped together personal computers, workstations, servers and networks as "commodities" and said DEC's future profitability hinges on enterprisewide networks and systems integration.

According to Olsen, DEC is being reorganized into four main business units: commodities, VAX/VMS systems, systems integration and services.

The company is emphasizing its Open Advantage campaign to consolidate a variety of current and pending DEC initiatives under one corporate strategy. Key elements include the following:

• Rolling out the initial pieces of its long-awaited Decnet Phase V [CW, May 27]. With expanded

Continued on page 4

Fast 486s too much too soon

Systems ready to roll, but users putting on brakes

BY MICHAEL FITZGERALD and JIM NASH
CW STAFF

Major personal computer vendors are gearing up to offer products based on Intel Corp.'s forthcoming 50-MHz I486 chip, but users and analysts are showing only modest interest.

IBM, Compaq Computer Corp., Dell Computer Corp. and NCR Corp. are expected to announce PCs or file servers based on the new high end of the Intel line shortly after the June 24 announcement. But system prices are expected to run upwards of $15,000, and some information systems managers are questioning whether any desktop user needs that much power.

One beta-test user of an IBM machine based on the 50-MHz I486 said early indications were that a fully configured file server with 32M bytes of random-access memory could cost as much as $25,000.

The user said IBM's machine was too powerful for his needs in the foreseeable future, although he said he felt the price/performance would ultimately be attractive.

"I don't think you'll

Continued on page 137

Raking in the chips

One estimate predicts the I486 chip family will easily overshadow the 80386 in terms of revenue for Intel Corp.

(Revenue in millions)

Model	1988	1989	1990	1991*
80286	$240	$125	$60	$48
80386SX	$30	$160	$325	$315
80386DX	$528	$500	$555	$413
I486	—	$90	$375	$900

*Projected

Source: Morgan Stanley — CW Chart: Marie Haines

INSIDE

Integration Strategies — Tactics for corporatewide data sharing. Page 93.

IBM's a bear, according to investment analysts who have cut back their projected profit outlook for 1991. Page 4.

Computer Associates links IDMS and Datacom databases to its Compete spreadsheet product. Page 137.

Microsoft revises network applications licensing policies. Page 136.

NEWSPAPER
#630 5-DIGIT 48103
#UIV7ZE300M099039# 8018189421
UNIVERSITY MICROFILMS INT 8768
UNIVERSITY MICROFILMS INT
SERIAL PUBLICATIONS
300 N ZEEB RD
ANN ARBOR MI 48103

IN THIS ISSUE

NEWS

4 Analysts turn bearish on **IBM**, with some saying they see a long-term decline in the making.

6 **Bull HN** catches the industry by surprise by announcing the replacement of its former president and CEO with an executive from International Data Group.

8 As the **FAA** pushes systems upgrades further off schedule, controllers in California's Bay Area make do with ancient systems that could reportedly have 'a serious impact on air safety.'

10 The key to data security, according to **Microsoft**, is public key encryption technology, which the firm plans to license from RSA Data Security.

12 Does **Aldus** have the gift of **Persuasion**? Analysts say it may have, as the company adds a convincing voice to the chorus of presentation graphics packages.

16 Two versions are better than one: **HP**'s second version of **Openview** highlights network consolidation features that promise to save users thousands of dollars in hardware costs.

136 What comes down must go up? **Prime** will attempt to convince users at the National Prime User Group meeting that plans for internal cost control and new product announcements will stabilize its plummeting profits.

Quotable

"They can cut as many people as they want, but it won't do any good if people aren't buying their systems. And they aren't; that's the problem."

KEVIN CUSKLEY
SWISS BANK CORP.

On IBM's financial outlook.
See story page 4.

SYSTEMS & SOFTWARE

29 **IBM**'s technical strategy may be firm, but its commercial plan is bending to include **HP**'s Softbench applications development tools.

PCs & WORKSTATIONS

45 Cupid's arrow didn't prompt **Compaq**'s change of heart toward its pricing policies — competition did.

54 Technology Analysis: Reviewers say the latest version of **Wordperfect**'s Wordperfect offers even more features. The only drawback: It is still complex.

NETWORKING

59 Users deciding to take a bite of the **Apple** System 7.0 operating system upgrade may have to wait out a few worms.

MANAGER'S JOURNAL

79 A behind-the-scenes glimpse of the complicated computerized transactions involved in providing electrical power to the masses.

COMPUTER INDUSTRY

111 Following in the fingerprints of desktops and laptops, the new pen-based PCs are predicted to start a craze in the computer industry.

INTEGRATION STRATEGIES

93 There's more than one way to integrate corporate-wide databases.

IN DEPTH

107 The ins and outs of lessor specialization. By Tom Martin.

DEPARTMENTS

6, 136 News Shorts
20 Advanced Technology
24 Editorial
90 Calendar
119 Computer Careers
120 Industry Currents
128 Marketplace
134 Stocks
138 Trends

The 5th Wave

EXECUTIVE BRIEFING

■ **Lotus' 1-2-3 for the Apple Macintosh,** first announced nearly four years ago, is getting a thumbs-up from beta-test users. However, other Macintosh users have indicated that the company will have a tough time moving in on the Macintosh spreadsheet turf, where Microsoft's Excel dominates. **Page 1.**

■ **The IS group at Newport News Shipbuilding,** long silent because of its company's classified work, goes public with its large-scale computer-integrated manufacturing efforts. The company, which designed the U.S. Navy's Seawolf nuclear submarine, is completing a software system based on Computer-Aided Logistics Support, a U.S. Department of Defense standards initiative. The system will manage submarine maintenance and repair data. **Page 1.**

■ **Microsoft is giving users more breathing room** when it comes to licensing its network applications. The company is shifting to a policy that would base payment on the maximum number of customers using its software concurrently. **Page 136.**

■ **Large IBM systems users can expect some pricing changes** as well. A company executive says adjustments to the graduated pricing structure are ahead. **Page 29.**

■ **CEOs** spell out what they want in an IS chief: Technology know-how is good, but IS executives need to be businesspeople who are 'agents of change.' **Page 86.**

■ **IS managers are ducking out** when it comes to privacy issues on customer information, according to a recent survey of 50 IS executives by Georgetown University's School of Business Administration. Of the executives surveyed, none are taking leadership roles to direct privacy policies at their companies. **Page 79.**

■ **Wall Street analysts** show their lack of faith in IBM by downgrading earnings estimates for this year. Several say they foresee long-term trouble for IBM as it adjusts to the commodity hardware business. **Page 4.**

■ **IBM is expected to release a number of networking products** later this year to better manage corporatewide LANs. **Page 1.**

■ **Compaq moves ahead** with restructured pricing and support policies designed to appease corporate users. The changes are welcomed by customers who say it is about time. **Page 45.**

■ **Pen-based computing** holds the promise of being an explosive market, industry observers say. With sales forecasts as high as $3.5 billion by 1995, the industry's big guns are jumping into the business. **Page 111.**

■ **Getting the best lease deal** begins with understanding the ways in which lessors specialize: by product, lease-term length and transaction cost, to name a few. Then, armed with a standard bid request form, users can be sure they're negotiating with the right lessors. **Page 107.**

■ **Rapid prototyping, enterprise data modeling and re-engineering** top the list of approaches taken by IS organizations trying to integrate scattered databases. **Page 93.**

■ **On-site this week:** The U.S. Environmental Protection Agency adapts its networking strategy to meet recent federal government standards. **Page 59.** The IRS develops an expert system to assist in processing taxpayers' correspondence. The IRS hopes the software will help reduce to between 3% and 9% the number of errors it makes on the 15 million taxpayers' inquiries and claims it receives annually. **Page 33.** Florida's Lee County replaces Wang equipment with DEC systems. Wang's 'downfall' was inadequate service and response at this user site, where frequent thunderstorms caused many system crashes. **Page 35.**

SYNCSORT.
WHERE BUSINESS TURNS FIRST FOR SORTING EFFICIENCY.

And for good reason. Thousands of companies — including American Express, The Dow Chemical Company, AT&T and 97 of the Fortune 100 companies — have saved tremendous amounts of time and money by sorting with Syncsort.

For over 20 years, Syncsort has been the Number One sorting company, consistently outperforming all competition. Year after year, customers have given Syncsort the highest marks for reliability, efficiency, ease of installation, ease of use, technical support, and user education. Working in partnership with businesses of all sizes, Syncsort helps them get the fastest, most efficient sorts.

For increased productivity and greater savings, choose the sorting solution that the Fortune 100 turn to first...Syncsort.

syncsort
INC.
50 Tice Boulevard, Woodcliff Lake, NJ 07675
800-535-3355

Analysts trim IBM estimates

Wall Street observers cite low profits, recession as reasons for concern

BY NELL MARGOLIS
CW STAFF

Doubting IBM's ability to regain a bold leadership stance in the increasingly fragmented computer industry, stock market analysts have been slashing their estimates of how much profit the company will rake in this year.

Dallas-based Eppler Guerin & Turner, Inc. recently marked down its IBM projection by 12%. "Our reason is pretty simple," Eppler Guerin analyst Robert K. Hedrick said. "They're not going to make as much money this year as we'd thought."

IBM's broad array of product offerings and apparently avid customer interest in its recently introduced Enterprise System/9000 mainframes offer hope of an earnings resurgence, Hedrick added, "but only when the recession ends, and that may not be so quick a rebound."

"I've got to assume that there's still a market for mainframes somewhere," said Martin Ressinger, an analyst at Duff & Phelps Investment Research Co. "But I lowered my [IBM] estimates because I've just been getting a kind of bad feeling about the business overall." Asked whether he was referring to IBM's business or the computer industry, Ressinger said, "Both — bad about the industry, worse about IBM."

Wall Street's faith in the world's largest computer company has been under a strain since late March, when the firm — fresh from an impressive 1990 revenue and profit surge — stunned analysts by warning that first-quarter profits would nosedive because of harsher-than-expected effects of worldwide financial turmoil.

In fact, Brown Brothers Harriman & Co. analyst William Milton speculated that the recent epidemic of estimate-chopping is a delayed reaction to guidance that IBM clearly gave Wall Street but that was too discouraging for Wall Street to believe.

While some analysts took the firm's explanation at face value, others were skeptical that the problem was caused solely by external forces [CW, March 25].

Last week's airing of an employee-generated memo documenting IBM Chairman John Akers' barrage of scalding remarks fired at top executives and middle managers in late April did little to allay the unease that has been building in the analyst community, analysts said.

The Akers papers portrayed the usually circumspect chairman as enraged that a lax sales force and possibly lackluster products are at least as responsible for lost market share as adverse currency translation and worldwide recession are. The memo — the substance of which was confirmed by an IBM spokesman — left no doubt that Akers is ready to fire people to achieve a better sales record.

The potentially massive work-force reductions that the memo portends "are all to the good," said veteran IBM watcher and consultant Robert Djurdjevic, a longtime advocate of a slimmer, more efficient IBM.

"They can cut as many people as they want, but it won't do any good if people aren't buying their systems. And they aren't; that's the problem," said Kevin Cuskley, an analyst at Swiss Bank Corporation Investment Banking, Inc.

"For two straight years, through ups and downs, I've been very positive about IBM," Cuskley added. "But over the last six months, I've felt more of a concern that it is never going to reassert itself as a real leader — that it's just going to turn into a classic cyclical stock. They did a whale of a job with the [Application System]/400 — but how many more AS/400s will there be?"

Possibly none, unless and until IBM faces up to the need for quantum cultural change, said James Meyer, an analyst at Janney Montgomery Scott, Inc. "IBM needs to change its culture and take some risks," he said. "They've certainly got the talent and resources to make it happen." In the space of one year, Apple Computer, Inc. reduced its product cycle time from more than two years to less than nine months "by changing the entire way things are done at the company. IBM certainly has as much engineering talent as Apple. What they have to do is just go do it," he noted.

Digital Equipment Corp. also began to feel the edge of Wall Street's ax last week. A meeting with DEC executives failed to produce any reason to believe that DEC can surmount the beating it has been taking from the continuing U.S. recession and the spreading recession in Europe.

Slip sliding away

Analysts have been cutting back projections of IBM's profit this year. Current estimates of $3.95 billion to $4.58 billion fall far short of the $6 billion reported in 1990

Name of investment firm	Estimate dropped from...	to
UBS Phillips & Drew	$8.50 per share	$7.25
Duff & Phelps Investment Research Co.	$9.00 per share	$8.00
Eppler, Guerin & Turner, Inc.	$8.25 per share	$7.25
Swiss Bank Corp. Investment Banking, Inc.	$9.00 per share	$7.00 (approx.)
Janney Montgomery Scott, Inc.	$7.40 per share	$6.90

CW Chart: Janell Genovese

Open systems

FROM PAGE 1

compatibility for Open Systems Interconnect (OSI), Transmission Control Protocol/Internet Protocol (TCP/IP) and the proprietary Decnet Phase IV protocols, Phase V "will pull the whole thing together with its strong open emphasis for networking," said Peter Schay, an analyst at Gartner Group, Inc. in Stamford, Conn.

A key point for the success of DEC's open networks will be its new multiprotocol router, which enables direct communication between the OSI, TCP/IP and Decnet Phase IV networks.

- Revealing the first glimpses of its next-generation Advantage-Networks, DEC's catchall term for a migration strategy for customers that want to gradually phase in compliance with the OSI protocols.
- Presenting VMS Open, a Posix-compliant operating system that was demonstrated last week running on a Sun Microsystems, Inc. workstation as well as a Decstation running under DEC's Unix variant, Ultrix.

DEC executives were unclear, however, on exactly when and how the company will distribute the initial pieces of this new "portable" VMS, said David Evancha, an analyst at Workgroup Technologies, Inc. in Hampton, N.H.

- Licensing some of its own software to other vendors involved with the Advanced Computing Environment initiative announced in April.
- Submitting its network management product suite — Enterprise Management Architecture — to the Open Software Foundation in Cambridge, Mass., as a proposed standard for corporatewide network management.
- Providing computer-aided software engineering tools from DEC that run on Sun workstations and a desktop version of DEC's transaction processing software.

ACCORDING TO OLSEN, DEC is being reorganized into four main business units: commodities, VAX/VMS systems, systems integration and services.

Portable applications

With its implementation of the first three Posix standards, VMS Open would allow users to write portable applications independent of the operating system, work on a VAX/VMS machine with a shell that gives the look and feel of Unix and write real-time applications for Unix.

With 850,000 Decnet licenses already in the field — as well as DEC's plans to have 1.5 million licenses by 1995 — networking is clearly the key to DEC's future as a multivendor systems integrator, analysts agreed.

"DEC is gravitating to systems integration very heavily," Evancha said. "They are taking a significant step away from hardware and more into software and services."

CORRECTIONS

Information about Gateway Information Services, Inc.'s DP Choice in the May 13 issue was incorrect. The product is available for any industry, not just insurance. However, it is only for sites running less than 50 million instructions per second. A $10,000 license may be purchased only after $15,000 in consulting services has been purchased.

.....

Because of incorrect information supplied by the vendor, a Product Spotlight chart [CW, April 8] listed Brock Control Systems, Inc.'s Field Activity Manager (FAM) as requiring a 150M-byte hard disk. The product requires a 40M-byte hard disk. Also, FAM runs on Unix, VMS and MS-DOS platforms, not just on Unix.

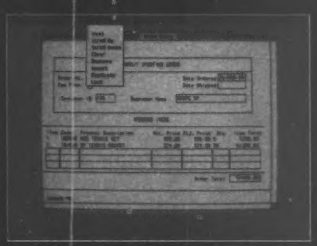
.....

The five-year warranty referred to in an article on Okidata Corp.'s OL 820 printer [CW, May 13] applies only to the LED printhead. The printer itself carries a one-year parts and labor warranty.

COMPUTERWORLD

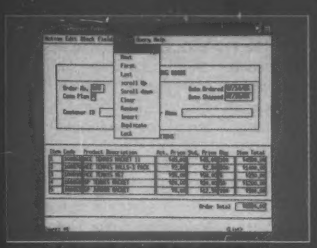
Editor in Chief
Bill Laberis
Executive Editor
Paul Gillin
News Editor
Peter Bartolik
Assistant News Editor
James Connolly
Senior Editors
Clinton Wilder, Management
Elisabeth Horwitt, Networking
Patricia Keefe, PCs & Workstations
Michael Alexander, Advanced Technology
Rosemary Hamilton, Systems & Software
Nell Margolis, Industry
Maryfran Johnson, Systems & Software
Senior Writers
Joanie M. Wexler
Richard Pastore
Staff Writers
Sally Cusack
Carol Hildebrand
Christopher Lindquist
New Products Writer
Derek Slater
Research Coordinator
Kevin Burden
Features Editor
Joanne Kelleher
Senior Editors
Michael L. Sullivan-Trainor
Joseph Maglitta
Lory Zottola
Mary Grover Brandel
Donald St. John
Senior Writer
Alan J. Ryan
Associate Editors
Cathleen A. Duffy
Susan R. Nykamp
Researcher
Jodie Naze
Researcher/Writer
Kim Nash
Chief Copy Editor
Joyce Chutchian
Assistant Chief Copy Editor
Catherine Gagnon
Features Copy Editors
Kimberlee A. Smith
Alice Lesch Kelly
Copy Editors
Kelly E. Dwyer
Steven J. Condon
Catherine Cuddihee
Lisa McFarren
Design Director
Nancy Kowal
Graphics Designer
Tom Monahan
Design Assistant
Marie J. Haines
Graphics Specialist
Janell Genovese
Assistant to the Editor in Chief
Linda Gorgone
Editorial Assistants
Lorraine Witzell
Stefanie McCann
Connie Brown
Rights and Permissions Manager
Sharon Bryant
Back Issues
Margaret McIndoe
News Bureaus
Mid-Atlantic
201/967-1350
Johanna Ambrosio, Senior Correspondent
Washington, D.C.
Mitch Betts, National Correspondent
202/347-6718
Gary H. Anthes, Senior Correspondent
202/347-0134
West Coast
415/347-0555
Jean Bozman, Senior West Coast Editor
J.A. Savage, Senior Correspondent
James Daly, Senior Correspondent
Jim Nash, Correspondent
Marilyn Scott, Editorial Assistant
Midwest
708/827-4433
Ellis Booker, Bureau Chief
Michael Fitzgerald, Correspondent
IDG News Service
Penny Winn, Director
Main Editorial Office
Box 9171, 375 Cochituate Road
Framingham, MA 01701-9171
508/879-0700
Fax: 508/875-8931
MCI Mail: COMPUTERWORLD
Subscriptions: 800/669-1002

DEVELOP IT ONCE AND FOR ALL.



MACINTOSH

CHARACTER MODE



MOTIF AND OPEN LOOK

BLOCK MODE

PRESENTATION MANAGER

These days, it seems almost everyone has a favorite Graphical User Interface (GUI). And most organizations also have non-graphical user interfaces running on block mode terminals, character mode terminals and PCs. Which means that developers must spend months rewriting each application for each incompatible system.

Unless the applications are built with Oracle® Tools.

An application developed with Oracle Tools automatically adapts to the native look and feel of the computer on which it runs. On Sun, IBM, DEC, HP, PC, Macintosh and virtually any other computer. Even on character and block mode terminals. All without changing a single line of code.

Today, Oracle Tools such as SQL* Forms and SQL*Menu support Open Look, Motif, Macintosh and Presentation Manager. As well as block mode terminals, character mode terminals and PCs. Soon, Oracle Tools will also support other GUI standards including Microsoft Windows and NextStep.

So your applications can be deployed across all the computers in your organization. Your users can take full advantage of their GUI without having to be re-trained. And your programmers don't waste time recoding applications for each user interface.

1-800-633-1073, Ext. 8156

Call us to receive the free Oracle Tools Information Kit, illustrating the full capabilities of Oracle Tools.

It'll show you how to solve any GUI mess once and for all.

ORACLE®

Software that runs on all your computers.

©1991 Oracle Corporation. ORACLE, SQL* Forms and SQL* Menu are registered trademarks of Oracle Corporation. Macintosh is a trademark of Apple Computer, Inc. Open Look is a trademark of AT&T. Motif is a trademark of Open Software Foundation, Inc. Presentation Manager is a trademark of International Business Machines, Inc. All other trade names referenced are the service mark, trademark or registered trademark of the respective manufacturer. Call for hardware and software requirements. In CANADA, please call 1-800-668-8925 for product and seminar information.

NEWS SHORTS

IBM draws PC-DOS into factory nets

IBM announced last week a DOS client version of Distributed Automation Edition (DAE) that it said better integrates existing DOS-based factory-floor collection systems with its plant management systems. DAE is a plant management application enabler that runs on OS/2 and VM systems. PC-DOS systems can now use Communications System/DOS to develop applications able to send factory-floor data to an OS/2 server running DAE. The server can then process the data locally or send it up to a VM host running DAE. Users can also migrate OS/2 DAE-based applications down to DOS systems running CS/DOS, IBM said. Priced at $600, the product is available now.

HP to cut PC prices

Hewlett-Packard Co. is expected to cut prices on its personal computer line by about 10% today, continuing the price-cutting trend among major vendors. HP's high-end Vectra PCs, based on Intel Corp.'s I486 processor, will now cost $15,999, down from $17,799. The company's 80386-based computers are similarly reduced. HP is also reducing hard disk prices.

Low-cost 386SX desktops from AST

AST Research, Inc. is expected to introduce an Intel Corp. 80386SX-based desktop computer today. The basic configuration of the Bravo 386SX/20 offers Super VGA compatibility and 2M bytes of random-access memory. AST will offer a version with no hard drive for $1,895, a model with a 40M-byte hard drive for $2,395, and a 40M-byte configuration bundled with Microsoft Corp.'s Windows 3.0, Lotus Development Corp.'s 1-2-3 Release 3.1, a Super VGA monitor and a mouse for $2,895.

DEC wins Navy contract

Digital Equipment Corp. announced last week that it has won a U.S. Navy PC network integration contract with a potential value of $140 million. The contract gives DEC the opportunity to sell hardware, software and services to users of some 8,000 local-area networks connecting more than 1 million PCs for the U.S. Department of Defense. A company spokesman said DEC will be the "single point of responsibility" for integrating desktop systems from various vendors as well as installing and maintaining PC LANs for the Navy.

Service users want quick response

Rapid response is the most important criterion for choosing a service and support vendor, according to a recent survey of 404 information systems professionals conducted by Datapro Information Services Group in Delran, N.J. In the multiple response survey, 51% cited response time as a key factor in choosing their hardware and software support vendors, while 43% cited price, and 42% noted technical expertise.

Dartmouth mandates PC use

Beginning with the class of 1995, all Dartmouth College students will be required to own a PC. A faculty vote last month made Dartmouth the first Ivy League college to require PC ownership. Financial aid-eligible students will be offered loan assistance toward the cost of the standard PC, estimated at $1,200 to $1,600. Some 90% of Dartmouth's 4,200 students currently own PCs, and nearly 80% of incoming first-year students purchase a PC as freshmen.

U.S. firms to supply Japan's NTT

Five affiliates of U.S. computer companies are among the 10 suppliers chosen by Nippon Telegraph and Telephone Corp. last week for its Customer Service Integration System. The system will provide branch offices of the Tokyo-based telecommunications giant with a consolidated database to respond to customer questions and complaints. Among the suppliers chosen were IBM Japan Ltd., Nihon Unisys Ltd., Nippon Data General Corp., Nippon Information and Communication Corp. and Yokogawa-Hewlett-Packard Co.

More news shorts on page 136

Publishing exec to head Bull HN

IDG's Leblois named CEO, Pampel to serve as adviser during transition

BY SALLY CUSACK
CW STAFF

BILLERICA, Mass. — Catching the computer industry by surprise last week, Bull HN Information Systems, Inc. replaced its president and chief executive officer with an executive from the computer publishing and consulting industry.

Axel Leblois, 42, was named as the replacement for Roland Pampel, who will stay on as an adviser to Leblois during the next several months. Leblois was hired away from International Data Group (IDG), the parent company of *Computerworld* and other computer-related publications in more than 40 countries. IDG owns International Data Corp. (IDC), the Framingham, Mass.-based market research and consulting firm.

Leblois: *Bull HN "clearly needs to turn around its financial position"*

Pampel, 56, has been at Bull HN since 1988. He declined to accept a position at the company's Paris headquarters for personal reasons, a spokesman said. Bull HN is the U.S. operating arm of Groupe Bull.

Groupe Bull Chairman and CEO Francis Lorentz credited Pampel with integrating Bull HN into Groupe Bull's worldwide operations and introducing new products and services. Before joining Bull HN, Pampel served as president and chief operating officer at Apollo Computer, Inc. in Chelmsford, Mass.

Although Leblois has no direct experience in a computer manufacturing company, he said he is prepared to face several challenges confronting Bull HN.

"The company clearly needs to turn around its financial position. I have several years' experience in that," Leblois said.

According to Leblois, the first item on his agenda is to ensure U.S. customer loyalty, particularly among Bull's large-scale DPS 8000 and 9000 mainframe systems users.

Daniel J. Cavanagh, senior vice president at Metropolitan Life Insurance Co. in New York, a heavily invested Bull user, said he spoke briefly with Leblois after the announcement was made last week.

According to Cavanagh, Leblois said he was calling several large customers to reassure them that his charge from Bull is "doable," and that he was eager to establish relationships with clients.

Robert P. Tasker, vice president of the software research group at IDC and a former employee of Leblois, applauded the changes at Bull.

"I think Axel is more qualified than Pampel was — and that is nothing against Pampel, mind you — it is just that Pampel is an engineer by training. Axel is a customer-oriented marketeer."

Bull HN's cost structure far exceeds its current revenue structure, Tasker said. The company has sound technology but has demonstrated poor marketing skills, he added.

Jim Cassel, vice president and director of large computer systems at Gartner Group, Inc. in Stamford, Conn., said he has concerns as to whether Groupe Bull can survive without a serious equity partner and a trimming of its product line.

NEC Corp. is currently trying to convert an existing 15% ownership of Bull HN into 5% ownership of the parent company — a move that may be contested by the French government. Groupe Bull lost $1.17 billion in 1990.

Citing Bull's recently announced Distributed Computing Model, imaging and workstation products, Leblois maintained that Bull is very competitive with what is being done elsewhere in the marketplace.

Kirk S. Campbell was named president and CEO of IDC.

LAN control

FROM PAGE 1

management information up to the central Netview host, where it can be analyzed and responded to either by a human agent or by automated Netview applications, according to Laura Knapp, program adviser of enterprise LAN communications at IBM.

For example, LAN Server could notify Netview that a server is running out of disk space, and a prewritten C list program within Netview could respond by deleting some of the disk's back files, Knapp said. Database Manager could alert Netview of an unauthorized attempt to access a database, and Netview could automatically respond by cutting the user off.

Unlike IBM's LAN Network Manager, which can act as both a Netview adjunct and a network manager on its own, the forthcoming products will provide systems management only through the Netview host — at least for now, Knapp said.

IBM is, however, working on an OS/2-based LAN system management server that would be able to handle systems management locally without depending on Netview and would probably incorporate Hewlett-Packard Co.'s Openview, Knapp added. IBM announced last month that it would license and incorporate parts of Openview into an AIX-based LAN management workstation [CW, April 22].

IBM is also working with Novell, Inc. to enable Netview to collect systems management information from Netware servers, Knapp said.

Other projects

Other projects in the works with Novell include enabling IBM's Netview Distribution Manager to download Netware operating systems configurations.

IBM is also working to improve Netview's ability to track and manage the dynamically changing configurations and traffic patterns of a distributed computing ennvironment, according to Bill Warner, the vendor's director of network management.

Now in the works is a table that will sit in a virtual memory cache of the host and track the status of LANs, Systems Network Architecture (SNA) devices and other network devices in a dynamic, on-line fashion, Warner said.

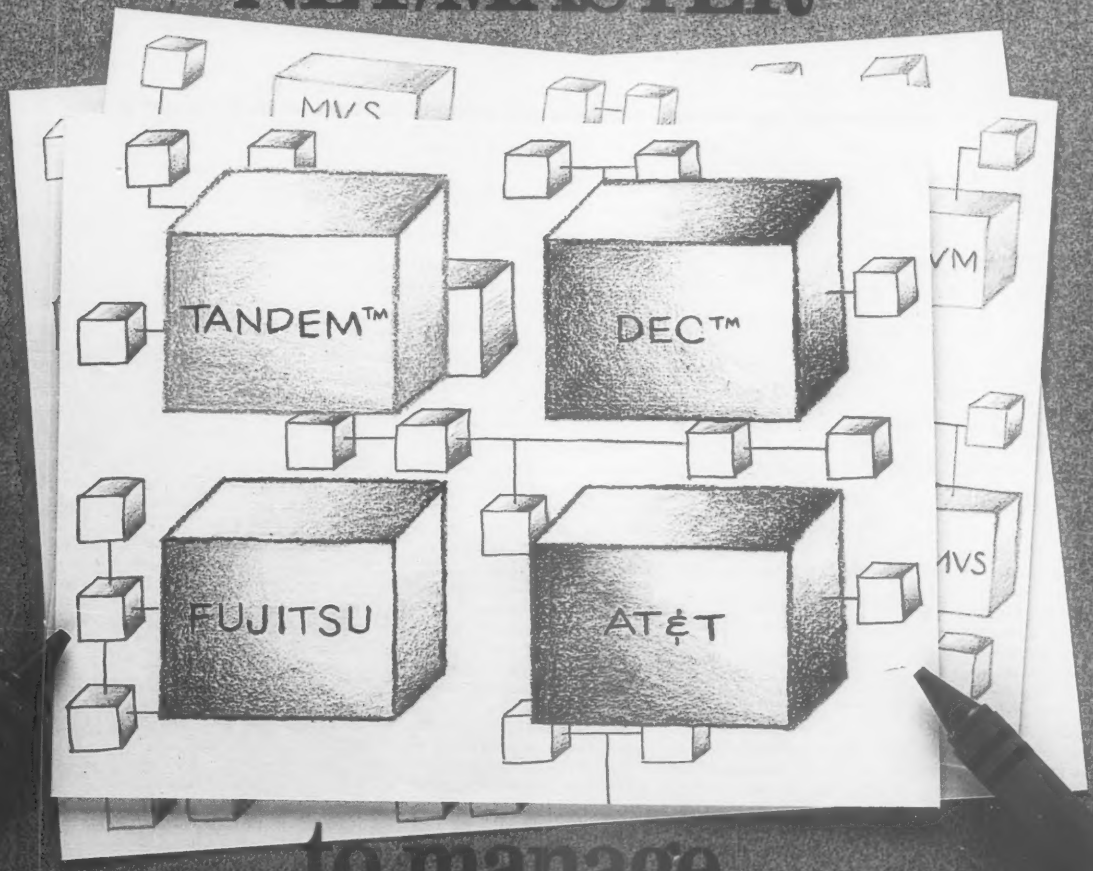
Currently, Netview must poll network devices or wait for alerts to be sent in order to get a view of what is happening in the network, Warner said.

In contrast, the table will allow the network manager to get a snapshot of the state of the entire enterprise network at any given time, including whether various devices are on or off and what they are connected to. The table will also include a programming interface so that automated Netview applications can make use of the status information in responding to network events, according to Warner.

Metropolitan Life is very interested in the idea of a "table-driven method of updating status information," Bortnyk said.

In particular, he added, the firm would like to see a more dynamic way of "accumulating configuration and alarm status of both SNA and non-SNA devices all in one place and having that system drive the graphics display" of network topology.

Four more reasons to choose NET/MASTER



to manage integrated networks.

NET/MASTER™ has already gained worldwide respect among managers of SNA networks for its unique level of integration and outstanding ease of use. Now Tandem, Digital Equipment Corporation and Fujitsu have joined AT&T in turning to NET/MASTER to support true peer-to-peer solutions across multiple environments. Through alliances with Systems Center, these leaders are making it easier for organizations everywhere to control their own destinies in a multi-vendor world.

To see what NET/MASTER can do for you, write or call Systems Center Inc., 1800 Alexander Bell Drive, Reston, Virginia 22091, (800) 533-5128, (703) 264-8000.

SYSTEMS CENTER

London 0734 391139 · Sydney (02) 411 7200 · Washington, D.C. (703) 264-8000

New FAA systems in holding pattern

Delays in modernization of Univac 8303-based system mean soaring costs, questions about safety

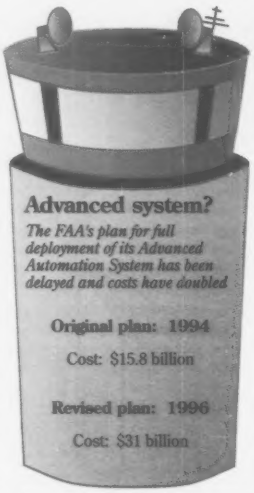
BY J. A. SAVAGE
CW STAFF

At the Bay Terminal Radar Approach Control facility in Oakland, Calif., a horn sounds two or three times each month, signaling a system overload and subsequent failure. When it sounds, air traffic controllers directing traffic for the Oakland, San Francisco and San Jose, Calif., airports have only a few seconds to memorize the positions, speeds, courses, altitudes and destinations of the 12 planes, on the average, they are guiding. Then their screens go blank.

"It takes about 10 seconds [for the screens] to come back," said Joel Hicks, a former Oakland controller who is now director of safety, technology and training at the National Air Traffic Controllers Association (NATCA) in Washington, D.C. "Sometimes, when the information comes back, some of it is missing. That's when it gets dangerous," he added.

New computers to replace the Federal Aviation Administration's (FAA) balky ones, such as those in Oakland, were to be installed as part of an overall upgrade program beginning in January 1994. But controllers will have to keep their memories sharp because that update is now scheduled for April 1995. With such delays, the cost of that system and others integral to air traffic safety has doubled to $31 billion, according to a General Accounting Office (GAO) report issued in mid-May.

This came almost one year after *Computerworld* revealed that the FAA's computer upgrade plan was four years late and $15 billion over budget. At that time, Martin Pozesky, assistant administrator of the upgrade program, said the FAA took some responsibility for the overruns. "In retrospect, the [upgrade] plan was not thoroughly thought out," Pozesky acknowledged.



Source: GAO CW Chart: Janell Genovese

> "THE FAA HAS made some glue-and-baling-wire improvements, such as new radar antennas, but we're stuck."
>
> JOEL HICKS
> NATCA

John Burt, executive director for acquisitions at the FAA, said much of the increasing costs stem from new projects. In December 1990, the FAA changed the system upgrade plan from the National Airspace System plan to the Capital Investment Plan, which encompasses the former but adds new projects.

However, the GAO report noted that those projects are being implemented "primarily due to delays" in the modernization plan.

For instance, the full, nationwide installation of the Advanced Automation System — chiefly an air traffic controller's console based on IBM's RISC System/6000 workstations — has been delayed until 1996 from its original estimate of full implementation in 1994.

To keep the current 16-year-old Unisys Corp. Univac 8303 processors going, the FAA is adding solid-state memory and has considered asking Unisys to resume manufacturing the obsolete systems, but that is unlikely. Interim projects include new radar antennae that should send more streamlined data to the old consoles.

The new IBM-based traffic controller consoles will include additional information such as color-coded flight destinations, altitude, speed and airline name. Other systems will provide easier access to more complete weather information as well as new radio communications.

The original cost of the National Airspace System plan remains the same — $15.8 billion, according to Burt. However, Allen Li, assistant director of aviation at the GAO, said the $15.8 billion figure was for accounting purposes only.

The FAA claimed things are improving. A December 1990 reorganization of the administration's systems acquisition and implementation policies should allow the systems modernization plan to proceed with few of the glitches that have plagued it for the last decade, Burt said.

Under Burt's charge, the agency is now attempting to "fly before buying," requiring that prototype systems be submitted for FAA testing prior to production.

Potential danger

Oakland's controllers have repeatedly asked the FAA for upgrades to their 1970s-vintage computers, submitting more than 15 "unsatisfactory condition reports" since 1989. Their efforts have been to no avail, despite one report's charge that such "outages could have a serious impact on air safety."

The Bay Area's systems problems, like those in other well-traveled corridors such as Chicago and Dallas/Ft. Worth, are unlikely to improve for at least five more years while FAA management irons out numerous contract problems and what Li called a "consistent underestimation of the complexity of technical upgrades."

NATCA has given up trying to get interim upgrades, according to Hicks. "The FAA has made some glue-and-baling-wire improvements, such as new radar antennas, but we're stuck," he said. "The system will work because the air traffic controllers will work around adversity. They expect the consoles to break down."

Hicks, who was one of the few officials to link obsolete and overworked computers to danger in the skies, added that it will "take a disaster to get some movement on this."

Sky-high costs

The $31 billion budget for the FAA's Capital Investment Plan puts a new twist on enormous government contracts: If the plan is funded, it could be wasteful; if it is not funded, the administration's technical infrastructure will only get worse.

In December 1990, the plan was redefined to add 33 major new projects to the 11 existing ones. The GAO reported in mid-May that many of those projects would have been unnecessary if the original $15.8 billion plan had been completed on time.

While the GAO has been chastising the FAA for a decade over what it has called wasteful contract management, it is Congress that controls the purse strings.

The FAA has come under some tough questioning by Congress, specifically the U.S. House and Senate Appropriations Committees, but each year, Congress continues to dole out more money to the agency.

"It is very hard for a member of Congress to question the FAA because the issues are so technical," said an aide to Sen. Frank Lautenberg (D-N.J.), chairman of the Senate Appropriations Subcommittee on Transportation.

"The usual method Congress uses to deal with mismanagement of a program is to threaten to pull the plug on it," explained Lautenberg's aide, who asked not to be identified. "But that is not an option here. If you don't provide funding, it's going to get worse."

1-2-3

FROM PAGE 1

While Lotus may not offer a superior alternative to Excel, Steenberge said, users would now have more choices for spreadsheets on the Macintosh.

But responses from other Macintosh users indicated that Lotus may have come up with too little far too late to have a chance at garnering much of the market now dominated by Excel.

"Where were they 2½ to three years ago?" asked Rick Christjansen, manager of administration and technical support at Manville Sales Corp.'s Denver-based research and development center. "I've got an installed base and an investment," he said, adding that Excel is a "well-oiled tool," which will make 1-2-3/Macintosh a hard sell.

Barry Eisenberg, senior management systems analyst at Hughes Aircraft Co.'s ground systems group, said Excel has been his standard for about five years.

Unless Lotus has some "wonderful and terrific new features," Microsoft would have to go out of business for 1-2-3/Macintosh to move in, Eisenberg added.

Stay or switch?

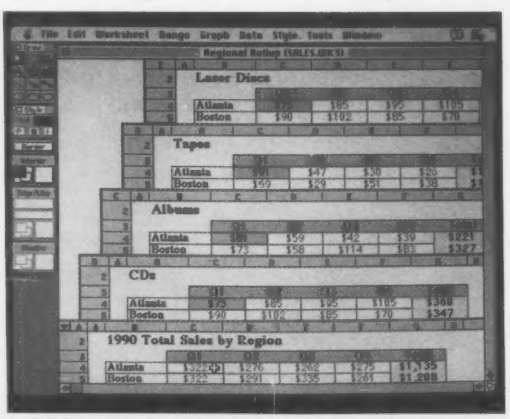
"My opinion is that people who know Excel aren't going to switch unless there is tremendous increased functionality," said George Brenner, vice president of information services at MCA, Inc. in Los Angeles. "It will affect a couple of people, but I don't think anyone's going to go wild over it."

Patricia Elfte, a presentation analyst at Pacific Gas & Electric Co. in San Francisco, said 1-2-3 users moving to Macintoshes may be very interested in the product, however.

She said the product retains features that will make DOS-based 1-2-3 users feel at home, such as the 1-2-3 Classic menuing system, which allows users to use the familiar "/" key commands. "A Lotus [1-2-3] user would not be afraid of it," she said.

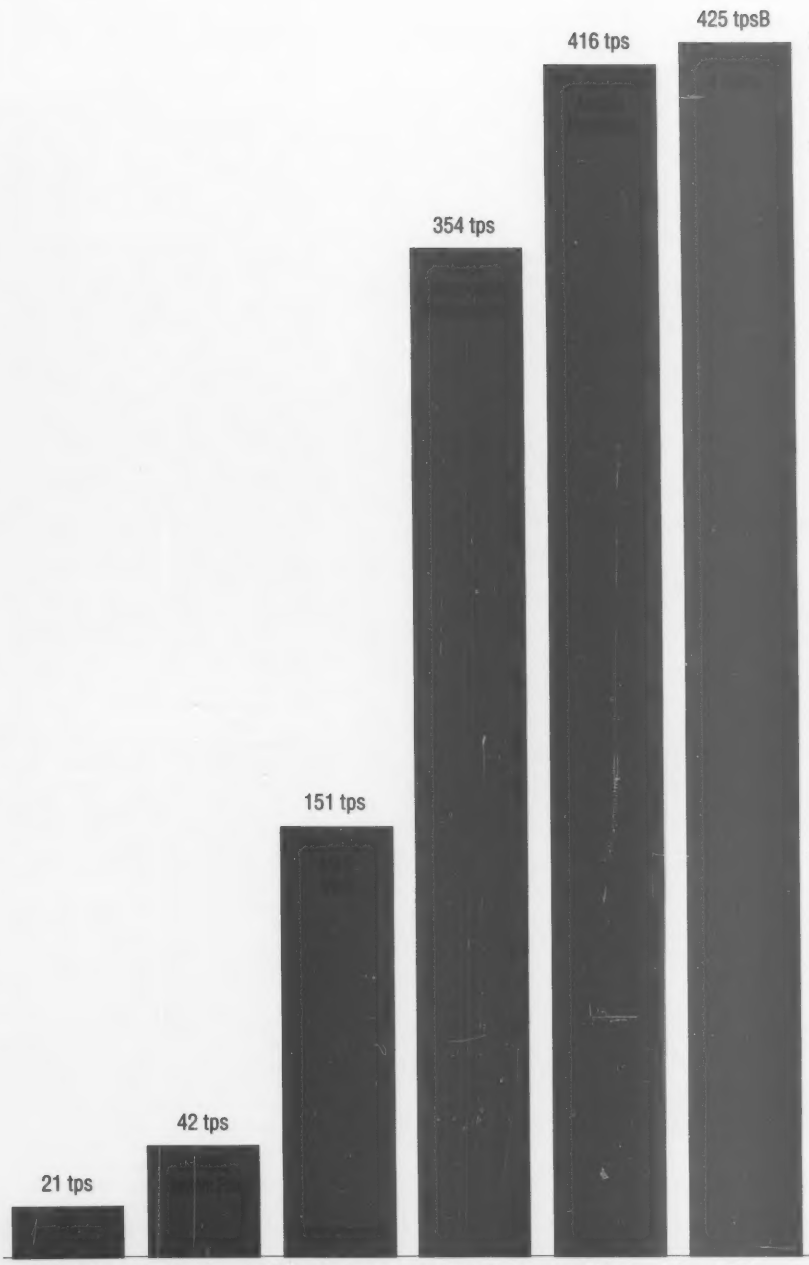
While Lotus' goal of breeching the Macintosh market may be a lofty one, some analysts said it can expect success.

Wordperfect Corp.'s recent move into the Macintosh arena serves as an example of an established player in the DOS world being able to take some Macintosh market share, said Bill Higgs, director of software research at Gartner Group/Infocorp. "I think that, assuming the product is an adequate product or better, [Lotus] probably can do that level of success on the Macintosh," he said.



1-2-3/Macintosh *retains the classic 1-2-3 menuing system*

FASTEST EVER BENCHMARK. 425 tpsB.



On March 12, Oracle® recorded the highest TPC Benchmark™ B rate ever: 425 tpsB on a VAXcluster. And the fastest TP1 score ever on January 21st: 416 tps on an IBM-compatible mainframe.

Both were industry-standard tests on 8 gigabyte databases, independently certified by Codd & Date.

All this is further proof that ORACLE not only runs virtually everywhere, it runs fastest everywhere. Fastest on PCs, workstations, minicomputers and mainframes. Fastest on standalone machines, or in a client/server configuration.

So no matter what system you choose, you get the best performance and lowest cost per transaction. No small concern to managers trying to squeeze the most out of their MIS/DP budgets.

1-800-633-1071 Ext. 8116

But don't just take our word for it. Call, and ask for the benchmark reports audited by Codd & Date. They certify the test results and give a full account of the testing methodology and system configurations.

Just the thing for a little speed reading.

ORACLE®

Software that runs on all your computers.

© 1991 Oracle Corporation. ORACLE is a registered trademark of Oracle Corporation. TPC Benchmark is a trademark of the Transaction Processing Performance Council. All other trade names referenced are the service mark, trademark, or registered trademark of the respective manufacturer. Call 1-800-ORACLE1 for hardware and software requirements. In Canada, please call 1-800-668-8925 for product and seminar information.

US West embracing distributed X terminals

BY JOANIE M. WEXLER
CW STAFF

PHOENIX — In a large-scale testament to the X terminal alternative, US West Small Business Services said last week it is installing 1,600 19-in. color models from Tektronix, Inc.

The X terminal purchase represents a major component of a five-year, multimillion-dollar re-engineering effort to move the communications company from disparate computing platforms to Unix System V Release 4 and distributed systems, according to Stan Ewert, manager of systems planning and design at the US West Communications, Inc. subsidiary.

"Our original idea was to provide a windowing environment on the desktop so our users could access multiple systems without having to spend time switching back and forth between them," Ewert explained. "We initially planned to install full-blown Unix workstations until we discovered that the cost per seat was less than half with X terminals."

The X terminals will span about 25 sites in 14 states and will replace antiquated ASCII terminals almost one for one, Ewert said.

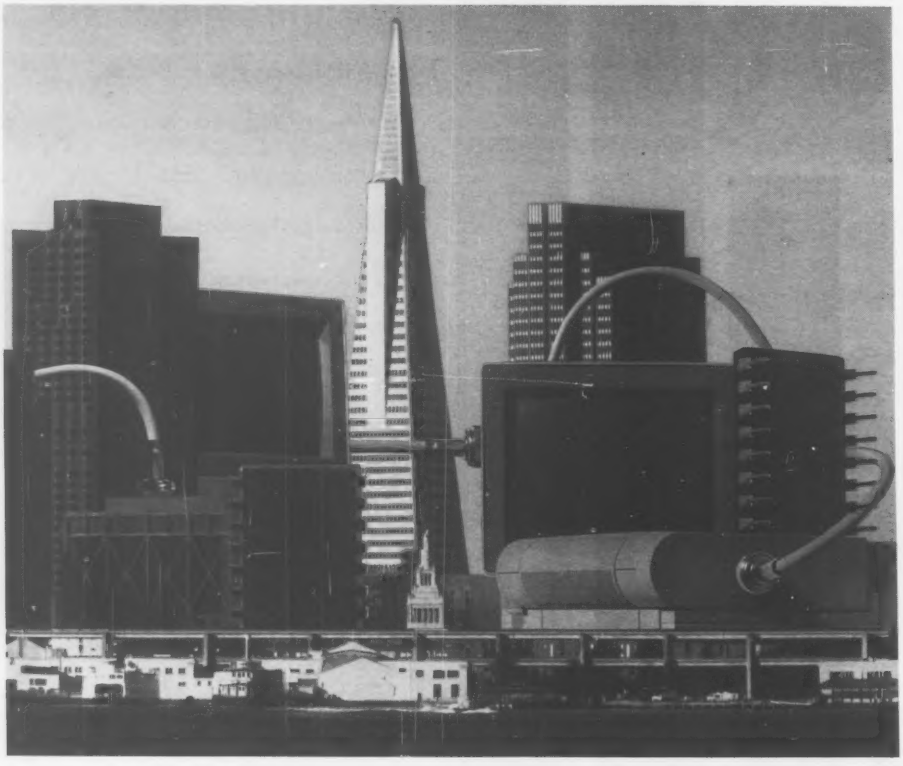
He added that the X terminals will be used in traditional business office and telemarketing operations, collection centers and customer training and assistance sites to improve customer service and drive operating costs down.

X terminals are based on the X Window System networking protocol. "X server" software installed on terminals, workstations and personal computers allows the desktop devices to access multiple hosts running "X client" software and display files and applications in multiple windows on one screen.

US West's installation deviates from this scenario in that it is installing Digital Equipment Corp. reduced instruction set computing servers on Ethernet local-area networks composed of X terminals. The DEC server will run the "X client" software as a gateway between the terminals and the various hosts throughout the company. US West chose this configuration, Ewert said, because it did not want to invest in X client software for its mainframes.

Ewert explained that disparate IBM, Unisys Corp. and Tandem Computers, Inc. mainframes existed in the three separate Bell telephone companies that merged into US West when AT&T divested in 1984. Per-unit prices for US West's most widely installed X terminal — Tektronix's XP29 — is $4,995, according to Tektronix. However, Ewert said the price is not reflective of the total US West/Tektronix contract.

Announcing a Prime Location for Network Products and Services.



Planning your next integrated network system? Let Data Preference put together the perfect package for you. We have the greatest selection of workstations, minis, PCs, peripherals and software. The latest from top name vendors like 3Com, Novell, IBM, Apple and Digital — all in one place.

Plus, we offer a complete range of support services. Our trained network experts handle installation; on-site, return-to-depot and time-and-materials maintenance; and a toll-free diagnostic hotline. And we'll tailor a finance program to your specific needs, whether you plan to rent, lease or buy.

So link up with Data Preference today. Just call our sales and service staff at any office nationwide or in the United Kingdom for more information on our inventory and services. Because the best connections start with good foundations.

DATAPreference
Incorporated
Rent a Leader. From the Leader.

Formerly Leasametric Data Communications, Inc.
Northwest 800.343.7368, 415.574.5797 • Southwest 800.638.7854, 818.240.3244 • Central 800.323.4823, 708.790.2050 • Northeast 800.241.5841
Southeast 800.241.5841, 404.925.7980 • London 011.44.923.897000 ©1991 Data Preference Incorporated

Microsoft readies security feature

BY JAMES DALY
CW STAFF

Microsoft Corp. is expected to announce today plans for building a sophisticated data security feature into future applications to help keep documents safe from electronic snooping.

With information systems managers stressing the importance of data integrity, the firm has responded with plans to license the "public key" encryption technology from RSA Data Security, Inc. Upgrades integrating the feature could come as early as year's end, insiders said.

RSA's Public Key Cryptosystem assigns each user a secret key, or code, as well as a public key that is published in a directory. Senders use the addressee's public key to route their messages, and recipients use the secret key for deciphering. Messages include "digital signatures" imprinted with the sender's key.

Microsoft will license RSA's Bsafe and Tipem software kits, letting its engineers incorporate RSA's privacy and authentication features into their applications.

RSA's technology has already been licensed by companies including Lotus Development Corp., Novell, Inc. and Digital Equipment Corp. Internet also applies the public key methodology.

A necessary evil

Advanced security components are quickly becoming a "must-have" feature for IS professionals. "In two years, it will be considered irresponsible engineering to design products without extensive security features built-in," said James Bidzos, president of RSA.

Experts warned that added software features should not be seen as an excuse for IS managers to let down their guard. "Just because the letters of a document are scrambled, it does not mean that the document is secure," said Harold Highland, editor of the Oxford, England-based "Computers and Security" newsletter.

The high regard for the RSA methodology, however, has created a storm of controversy at the federal level.

National Security Agency officials are battling efforts by the National Institute of Standards and Technology to release a public key encryption standard, fearing that the wide deployment of a system such as RSA's would hamper intelligence-gathering efforts.

To The Most Advanced RDBMS, It's Just Another Server.

Client/server computing integrates the powerful, graphical capabilities of desktop workstations with the proven data storage and processing capabilities of mainframes. Client/server computing, in essence, turns mainframes into servers.

But turning mainframes into servers creates two tough problems: Preserving MIS control over corporate data. And integrating existing applications with new ones.

Only SYBASE® solves both problems.

Unlike most RDBMS gateways, SYBASE gives MIS complete control over mainframe data, applications, and services by providing desktop access transparently through CICS—ensuring that all requests meet current transaction management, security, and monitoring requirements. In addition, SYBASE allows MIS to regulate network access to specific transactions, regions, and data sources. With SYBASE, MIS is always in control.

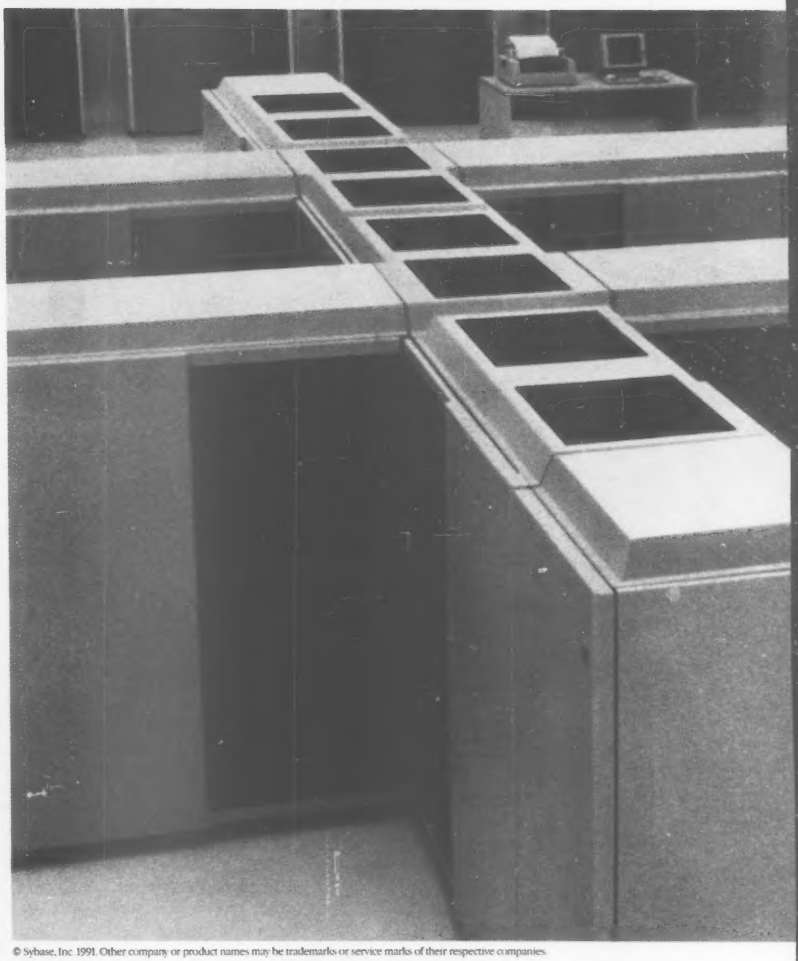
SYBASE also leverages the investments made in existing mainframe applications. SYBASE integrates new, LAN-based applications with mainframe applications written in COBOL, PL1 or Assembler, as well as with all data sources and services accessible from CICS, such as DB2, IMS/DB and VSAM. With SYBASE, existing mainframe applications don't have to be rewritten.

SYBASE is the only product that lets you effectively turn your mainframes into servers as you deploy new LAN-based applications on VAXes, UNIX, OS/2, and DOS-based platforms, Macintoshes, and others.

What's more, our professional services division, SQL Solutions, can help you design, develop, and integrate complete multi-vendor relational systems for your on-line, enterprise-wide computing environment.

To find out more, call and register for a Sybase Educational Seminar near you. Because the time to turn your mainframes into servers is now.

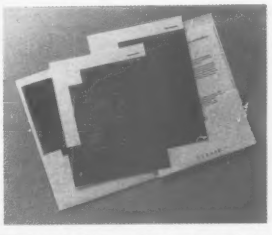
Just call 1-800-8-SYBASE.



© Sybase, Inc. 1991. Other company or product names may be trademarks or service marks of their respective companies.

SYBASE®

Client/Server For The On-Line Enterprise



Free! "Integrating The Mainframe." It's our latest, most comprehensive information kit. For your copy, please mail this coupon to: Sybase, Inc., Dept. S, 6475 Christie Ave., Emeryville, CA 94608. **Or call 1-800-8-SYBASE.**

Name_____

Title_____ Company_____

Address_____

City_____ State_____ Zip_____

See SYBASE in action. Watch "Computer Business Today" on the Financial News Network this week. Check your local listings for times.

Persuasion tries Windows

Aldus enters crowded presentation graphics playing field

BY CAROL HILDEBRAND
CW STAFF

Aldus Corp. is the latest at bat in Microsoft Corp.'s Windows-compatible presentation graphics lineup, but it may have a hard time snagging a significant niche from all the other power hitters on the field.

Users and analysts alike praised Persuasion 2.0 for Windows for its richness of features and ease of use, but they also said the market — already crowded with products such as IBM's Hollywood and Microsoft's Powerpoint — would not be an easy one to command.

"Whenever Microsoft comes out first with an application that isn't an absolute dog on Windows, it tends to become the standard," said Craig Cline, associate editor of the "Seybold Report on Desktop Publishing."

"Persuasion is a very nice product, but I don't know how much of a dent it can make," he added.

Although Persuasion and Hollywood "appear to be the ones to beat right now features-wise, you also have to take into account the marketing power of people like Microsoft," said Bill Coggshall, president of Los Altos, Calif.-based New Media Research, Inc. "We should see some good competition here."

New functions

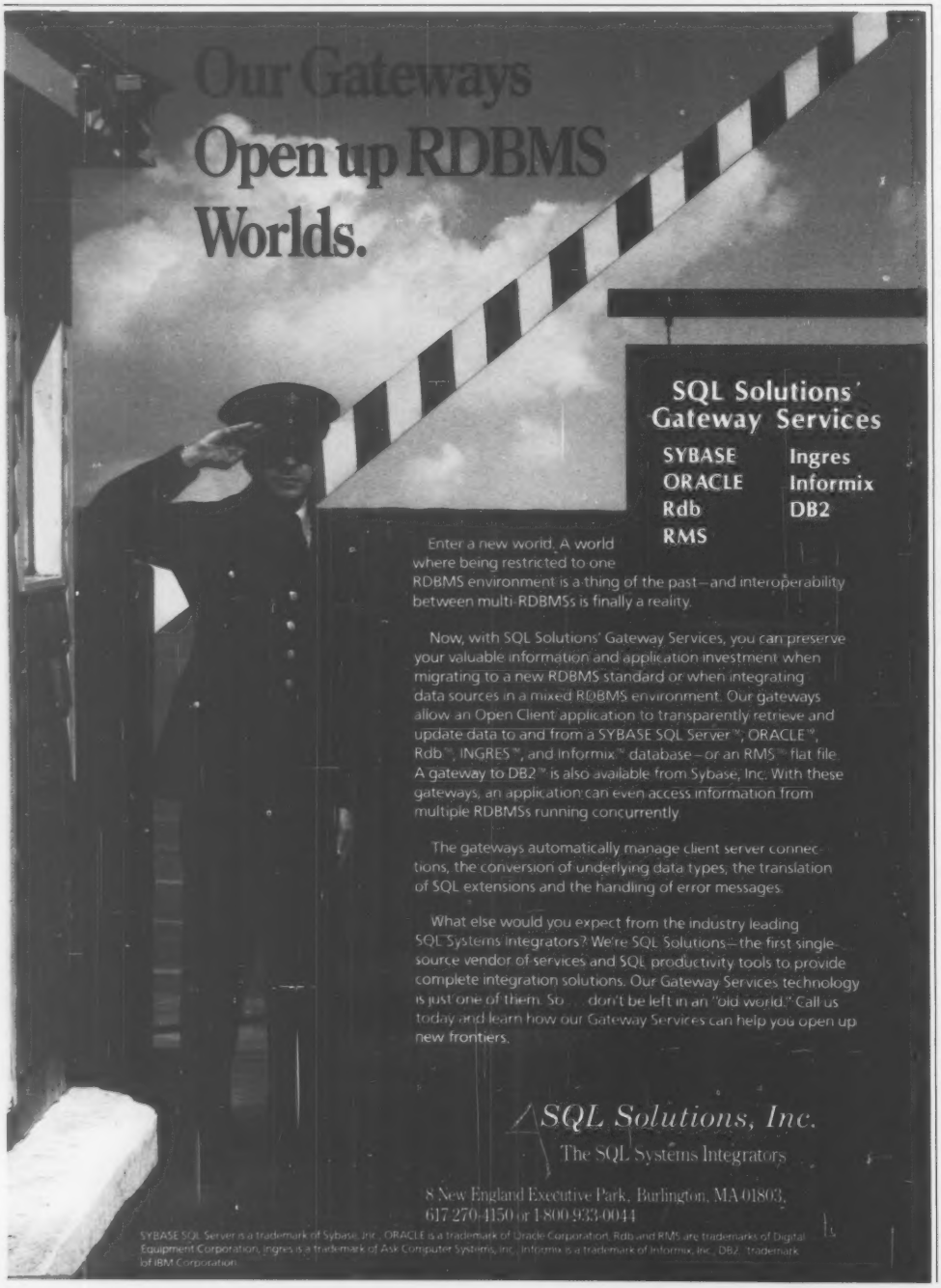
Persuasion, which Aldus recommends should be run on an Intel Corp. 80386-based personal computer with 2M bytes of random-access memory, boasts such functions as automatic templates, an outlining tool and a slide sorter.

"It strikes a nice balance between simplicity — if you just want to sit down and bang out a quick slide — and also giving you tools to do color and editing and tweaking of each slide," said Mark Moura, assistant city manager for the city of San Carlos, Calif., which beta-tested the product.

Moura added that he was especially impressed by the outliner, which automatically formats text and data into visuals and organizes slides.

Debbie Stark, a technical specialist at Princeton University, said that although the slide sorter view, which lets a user view an entire block of slides at once and allows modifications and changes in slide positioning, is "wonderful, it is the thing that really slows down once you have about 20 slides. It takes forever for it to draw [the slides] on the screen."

Persuasion 2.0 for Windows is currently available and is priced at $495.



LAN links take to space age

BY JOANIE M. WEXLER
CW STAFF

MARIETTA, Ga. — Terrestrial network users are not the only ones needing reliable interconnections of local-area network traffic at reasonable prices, a fact not lost on very small-aperture terminal (VSAT) maker AT&T Tridom.

Last week, the firm announced a homegrown router card for its VSATs — 1- to 2-meter satellite dishes that transmit wide-area traffic via satellite. The built-in $1,495 software option will reportedly be available in August to shuttle Transmission Control Protocol/Internet Protocol (TCP/IP) and Open Systems Interconnect (OSI) protocols between Ethernet LANs.

Navistar International Transportation Corp., a Chicago-based maker of trucks and diesel engines, said it has been successfully piloting the router-capable VSATs for one month and intends to install up to 600 of the devices.

Jim Fowler, Navistar's director of strategic partnerships and systems integration, said that "for our application, it was a no-brainer to use VSAT technology because the cost compared with terrestrial lines was substantially cheaper than that of the public packet and time-sharing networks we looked at."

AT&T Tridom's router accoutrement, Fowler said, fulfilled the specification in Navistar's request for proposal for a direct Ethernet-to-Ethernet connection. Fowler said the router is less costly and less of a management headache than protocol-converting gateways available for converting TCP/IP traffic to X.25 in the wide area.

"It's cumbersome when each application has to individually address each computer at each dealership," he said. "If we eliminate addressing overhead and the cost to manage and convert protocols, it makes life easier."

Stand-alone gateways cost about $7,000 to $8,000, while gateway boards for personal computers run about $2,500.

Navistar's bid also specified support for OSI protocols to ensure a common networking environment for the future, Fowler said. He added that no other VSAT vendor could display both the direct LAN interconnect function and OSI protocols at the time the bid went out.

DOS · OS/2 · LAN · SUN · RS/6000 · AT&T · IBM Mainframe · DEC/VAX · AS/400 · HP · WANG · BULL · IBM Mainframe · DOS · AS/400 · LAN

FOCUS for DOS · OS/2 · LAN · SUN · RS/6000 · AT&T · IBM Mainframe · DEC/VAX · AS/400 · HP · WANG · BULL · OS/2 · LAN · SUN · RS/6000 · AT&T · IBM Mainframe · HP · WANG · LAN · SUN

DEC/VAX · AS/400 · BULL · OS/2 · LAN · SUN · RS/6000 · AT&T · IBM Mainframe · DEC/VAX · AS/400 · HP · WANG · BULL · DOS · OS/2 · LAN · SUN · RS/6000 · AT&T · HP · WANG · LAN · SUN

THE SYSTEM THAT REWROTE HISTORY CAN NOW WRITE 4GL REPORTS.

IBM's most successful midrange system launch ever has just reached a new milestone. Introducing FOCUS for AS/400.

Now you can take advantage of the number one 4GL to write reports and develop applications. In a tenth of the time it takes with RPG and COBOL. FOCUS not only reduces your backlog, it greatly expands the range of applications you can write.

And your investment in existing data and applications is protected, because FOCUS can automatically access the OS/400 databases and any System/3X files.

What's more, any FOCUS application can be ported between PCs, the AS/400 and mainframes. This makes FOCUS the ideal development tool for both distributing applications and cooperative processing.

And FOCUS is the only 4GL that runs on all IBM platforms. In fact, Information Builders is an IBM selected SAA development partner, as well as an authorized Application Specialist for the AS/400. So you can always count on Information Builders for advanced SAA-conforming product development.

For more information, call us at 1-800-969-INFO. Outside the U.S., call 212-736-4433, ext. 3700. Or write to Information Builders, Inc., 1250 Broadway, New York, NY 10001. With FOCUS for AS/400, the system that rewrote history now holds even greater promise for the future.

FOCUS
Information Builders, Inc.

This advertisement refers to numerous software products by their trade names. In most, if not all cases, these designations are claimed as trademarks or registered trademarks by their respective companies.

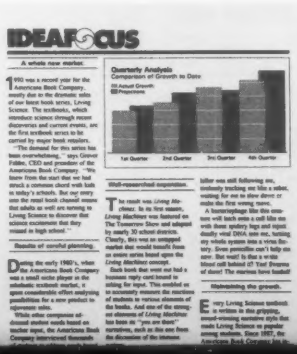
DOS · OS/2 · LAN · SUN · RS/6000 · AT&T · IBM Mainframe · DEC/VAX · AS/400 · HP · WANG · BULL · IBM Mainframe · DOS · AS/400 · LAN

People are always looking for affordable ways to make a better impression.

Soon a lot more people will be looking their best. Because now the best features of the HP LaserJet III printer are more affordable.

The new LaserJet IIIP printer features HP's exclusive Resolution Enhancement technology. An innovation that provides 300 dpi print quality superior to that of ordinary laser printers. The PCL5 printer language, with font scaling and HP-GL/2, brings even more to your documents. Fourteen bit-mapped and eight internal scalable typefaces give you thousands of options. And, to make things even more interesting, the LaserJet IIIP produces patterns, shading, spirals, and mirror images. In portrait or landscape.

HP has picked up the throughput speed of this 4 ppm printer. Due to a considerably faster I/O rate, the LaserJet IIIP accepts data as quickly as your PC can transfer it. So you not only get your output faster, you get your screen back faster. The LaserJet IIIP also has a new 16 MHz processor and PCL5 for on-the-fly typeface scaling and fast vector graphics. These


IDEAFOCUS

A whole new market.

Quarterly Analysis
Comparison of Growth to Date

Results of careful planning.

Well-researched expansion.

Maintaining the growth.

Adobe and PostScript are registered trademarks of Adobe Systems Inc. in the U.S. and other countries.
Call 1-800-752-0900, Ext. 2255 for your nearest authorized HP dealer. *Suggested U.S. list price. ©1991 Hewlett-Packard Company PE 12109

Tell them about the new LaserJet IIIP.

advancements mean this compact printer requires less time to print than many laser printers with higher ppm rates.

For versatility, the LaserJet IIIP has a multisized paper tray that accepts various sizes of paper and envelopes. An optional Adobe® PostScript® cartridge is available. And, of course, the LaserJet IIIP is compatible with all major software and HP LaserJet accessories.

The good looks you get with the newest HP LaserJet look even better when you consider the price. Just $1,595.* For a faxed data sheet, dial (208) 344-4809 from your FAX machine and enter document I.D. number 9601. Now everyone can add a little polish to their work.

HP Peripherals
When it's important to you.

HEWLETT PACKARD

HP broadens Unix net management product

Openview to allow integration of user-developed and third-party tools onto one console

BY J. A. SAVAGE
and JOANIE M. WEXLER
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. is one of the few firms among the lean ranks of distributed network management vendors making some hay. The company is poised to ship the second version of its Unix-based Openview Network Node Manager software this month in a move to beef up Openview users' ability to manage multivendor TCP/IP networks.

Openview is HP's product for managing heterogeneous, companywide networks. Enhancements in the $15,000 Release 2.0, announced last week, include the ability to create Simple Network Management Protocol (SNMP) applications without writing code and to quickly integrate user-developed or third-party applications onto one console.

The consolidation move could save users upwards of $25,000 in hardware costs, said Duncan Campbell, marketing manager at HP's Colorado Network Division.

Openview 2.0 is aimed at managing the widespread base of networks running Transmission Control Protocol/Internet Protocol (TCP/IP) and managed by SNMP. TCP and IP are data-transfer and routing protocols typically used in Unix-based networks, and SNMP is a network management protocol commonly used with TCP/IP.

Automatic capability

Another boost with Release 2.0, one Openview user said, is the software's ability to automatically gather statistical data about network traffic loads, cabling problems and error levels and place it into a file for analysis and manipulation.

John Danos, a network engineer at Rohm & Haas Co. in Philadelphia, said that with the previous Openview version, "you have to write your own scripts," while Release 2.0 automates the process.

Another important aspect of Release 2.0 is that it "allows you to access the private [management information base] of vendors supporting SNMP through your HP interface," Danos said.

A management information base is a database of all available information about equipment on a network. With Release 2.0, for example, HP has written an interface between the Openview console and the management information base for Novell, Inc.'s Lantern network monitoring device.

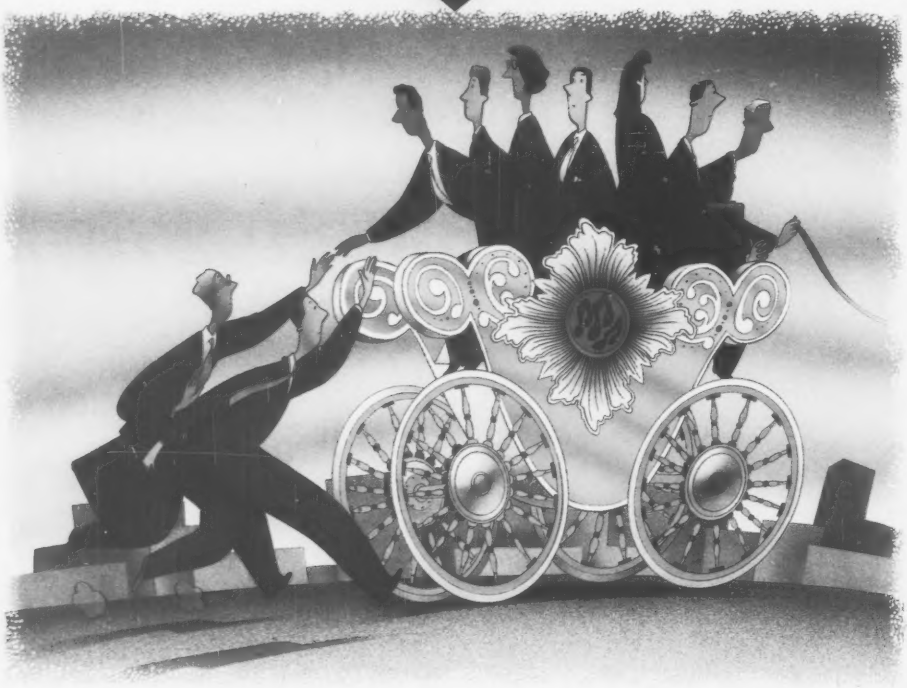
Platform flexibility

In the past year, HP has endeavored to make its network management software available on other vendors' hardware, such as Sun Microsystems, Inc.'s Sparcstations. Openview 2.0 will initially run on Sun's IPC, Sparcstation 1+ and 2 workstations, and the next release should support IBM's RISC System/6000 workstations, Campbell said.

In addition, IBM recently said it will license Openview code to link Openview to its Netview network management system.

HP leads in the as-yet-sluggish efforts at enterprise network management, said George Colony, president of Forrester Research, Inc. in Cambridge, Mass. "Digital Equipment Corp.'s efforts are stalled, and AT&T has made little progress on the data side," he said. "Openview is the only product that has created any excitement over the last few months."

UNIFACE
THE FIRST OPEN 4GL BY DESIGN



WE'RE NOT JUMPING ON THE OPEN SYSTEMS BANDWAGON.

A lot of vendors are now jumping on the "Open Systems" bandwagon. But where were they five years ago? It takes a product designed for the task. Openness cannot be added on or retrofitted; it must be there from the start.

We designed UNIFACE 4GL to be open from the day we began. Based on the ANSI ISO 3-schema architecture and industry standards, applications developed with UNIFACE are completely portable across DBMS/FMS, network, presentation interface, platform and CASE tools.

With UNIFACE 4GL, you can migrate applications from stand-alone to client-server, from character mode to OSF/Motif, Open Look, MS-Windows or OS/2 Presentation Manager, without rewriting a single line of code. You can also develop on SYBASE, ORACLE, INGRES, Informix, Rdb and a host of other DBMS/FMS across MS-DOS, OS/2, ULTRIX, Unix, VMS or VOS and deploy on any or all of them without recoding. Add to this UNIFACE's graphical 4GL debugger, and the ability to integrate text and data and you have a complete and open development environment.

We don't have to jump on the "Open Systems" bandwagon because we invented the "Open 4GL by Design" concept. And we delivered. We have thousands of customers around the world who are glad we did.

Call today for a free copy of "Guide to Building Futureproof 4GL Applications", or sign up for a free application development seminar and find out why UNIFACE is the only 4GL that is not jumping on the "Open Systems" bandwagon.

800-365-3608

uniface
Advanced Software Technology
1420 Harbor Bay Pkwy, #140, Alameda, CA 94501
415-748-6145 FAX 415-748-6150
OPEN 4GL BY DESIGN

Seminar Dates 1991

- 6/18 NYC, NY
- 6/20 Boston, MA
- 7/16 Santa Clara, CA
- 7/18 Los Angeles, CA
- 8/20 Dallas, TX
- 8/22 Chicago, IL
- 9/17 San Francisco, CA
- 9/19 Boston, MA
- 10/24 Morristown, NJ
- 11/15 Chicago, IL

UNIFACE ® is the registered trademark of Uniface International. The names of all other products mentioned are the registered trademarks of their respective companies.

Oracle to open CASE*Dictionary to other products

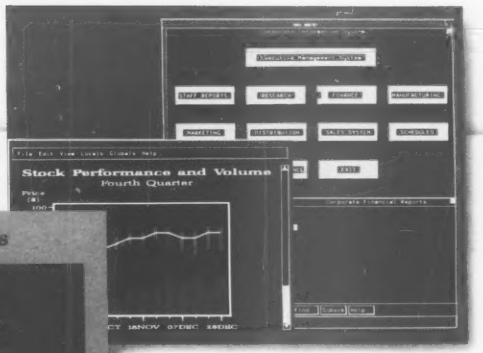
REDWOOD CITY, Calif. — Oracle Corp. said last week that it is building a new computer-aided software engineering (CASE) product, CASE*Exchange, that will allow users of IBM-compatible CASE packages, such as Texas Instruments, Inc.'s Information Engineering Facility (IEF), to transfer code into Oracle's data dictionary, the CASE*Dictionary.

The product will be built on top of an existing product made by British firm Software/1, said Richard Barker, a London-based Oracle senior vice president who directs Oracle's CASE product development. The terms of Oracle's agreement with Software/1, which funded the new development, were not disclosed.

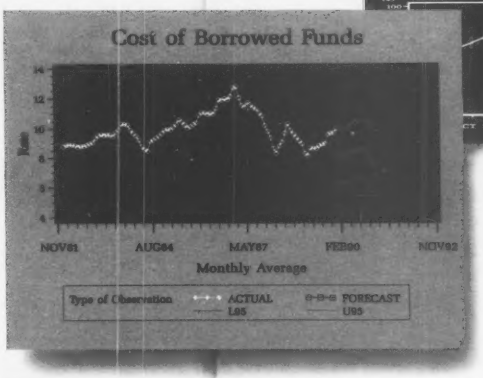
Key to the CASE*Exchange product is Software/1's "bridge" import/export utility, which maps the contents of one data dictionary into another, Oracle said. Software/1's product already connects to TI's IEF, Knowledgeware, Inc.'s Information Engineering Workbench, Intersolv, Inc.'s Excelerator and Pansophic, Inc.'s Telon code generator, Barker said.

The product, which Oracle and Software/1 engineers have been developing for several months, is due within one year, Oracle sources said.

Executive



Finance



A Familiar Name, A Friendly Face

The SAS System helps UNIX do what UNIX does best. It's never been easier to exploit all the price/performance advantages of UNIX...or to connect UNIX with other systems throughout your organization. That's because the SAS System's powerful data access, management, analysis, and presentation tools work the same way on UNIX workstations as they do on host machines.

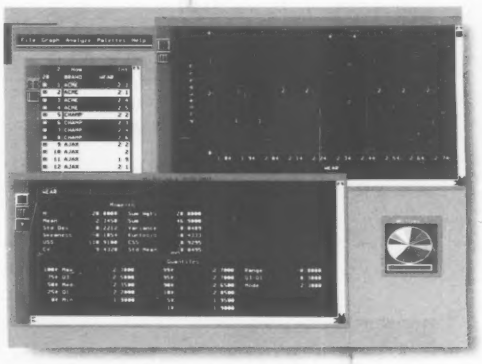
A menu-driven user interface takes you directly to the SAS System's most popular applications. We've also taken full advantage of UNIX native windowing. Plus, we've added new interactive capabilities for *visual* data analysis.

The SAS® Applications System Welcomes UNIX® to the Corporate Mainstream.

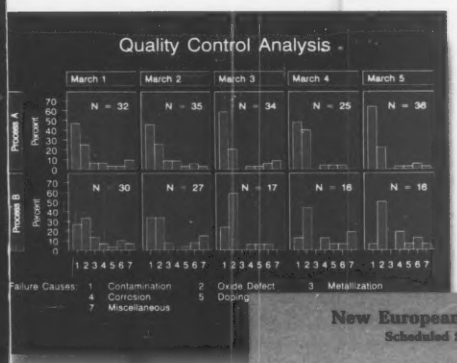
The Most Comforting Reason Yet to Choose UNIX.

The world's leading applications system has arrived on leading-edge UNIX workstations.* Bringing with it the same integrated applications that have made SAS software such an indispensable part of the corporate mainstream. And that's a very comforting thought if you're using or evaluating UNIX.

Research and Development



Manufacturing



Marketing

And a Risk-Free Offer

Let the SAS System be your link to strategic computing resources throughout your organization. Give us a call now at 919-677-8200 or fax us at 919-677-8123. We'll rush you a free SAS System executive summary, together with details about a no-risk software evaluation. In Canada, call 416-443-9811.

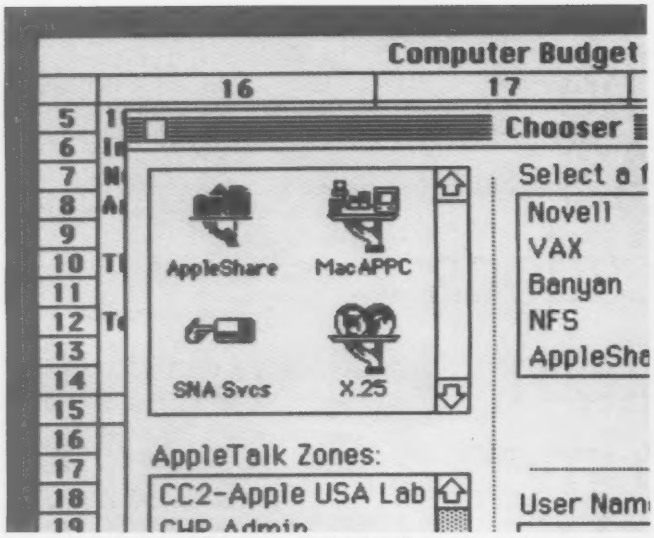
The SAS® Applications System. Simply Powerful. Powerfully Simple.

SAS Institute Inc.
Software Sales Department
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

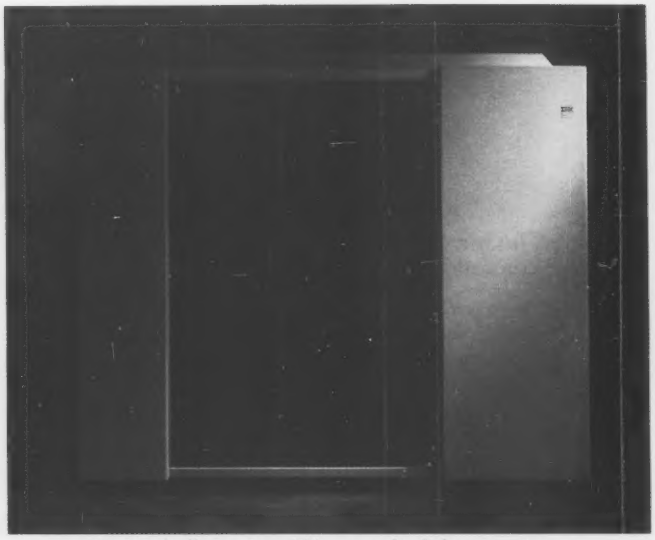
*From IBM®, DEC®, Sun, HP®, and others.

The SAS System runs on mainframes, minicomputers, workstations, and personal computers.
SAS is a registered trademark of SAS Institute Inc. UNIX is a registered trademark of AT&T.
Copyright © 1991 by SAS Institute Inc. Printed in the USA.

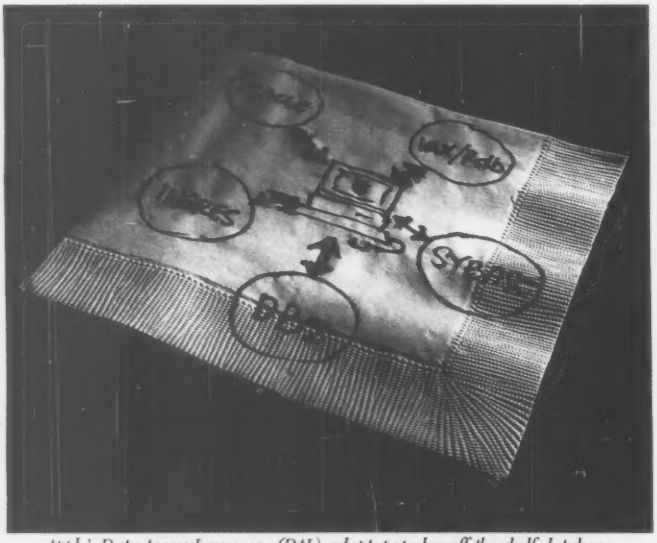
We're open



This is the Macintosh Chooser. A single point of access to a wide range of systems. The Chooser shows available network resources graphically and consistently. Just point the mouse and you're connected.



Macintosh offers an incredible range of tools for connecting with virtually any host-based environment, whether it's running SNA, TCP/IP, DECnet™, or OSI.



Apple's Data Access Language (DAL) adapts popular off-the-shelf database, spreadsheet, and data analysis software to major SQL environments. So nontechnical users can easily access remote databases.

Apple A/UX® lets Macintosh run UNIX® applications plus thousands of Mac® programs. At the same time you can run X-Window and MS-DOS applications, and cut, copy, and paste between any of them. No other desktop computer can do this.

© 1991 Apple Computer, Inc. Apple, the Apple logo, A/UX, Mac, Macintosh, and "The power to be your best" are registered trademarks of Apple Computer, Inc. UNIX is a registered trademark of AT&T, and MS-DOS is a registered trademark of Microsoft Corporation. DECnet is a trademark of Digital Equipment Corporation, and X-Window System

to anything.

Macintosh shares data with DOS PCs via Novell, 3Com, Banyan, and more. Macintosh reads and writes DOS files on a floppy disk. Macintosh runs DOS programs. Maybe your next DOS computer should be a Macintosh.

Information isn't much good to people who can't get to it. Macintosh sorts out the complexities of multiple computer systems and presents vast information to people at the desktop in a single, consistent way.

is a trademark of Massachusetts Institute of Technology. One videotape per customer. Offer good only in the U.S. and while supplies last. Allow 4-6 weeks for delivery.

While diversity may make life rich and fascinating, it makes life as an IS manager something short of serene.

What is politely referred to as the "multi-vendor environment" is an amalgam of disparate hardware, incompatible operating systems, dissimilar databases, and multiple networks. Nevertheless, IS people are expected to make these all work together in perfect harmony.

But lately, a lot of people are finding the source of their solution a pleasant surprise: the Apple® Macintosh® computer.

They're finding that Macintosh comes out of the box with sophisticated networking capabilities designed right in.

That Macintosh is open to virtually any host, any file server, or any database, through any network.

That Macintosh makes the desktop the place where diverse systems come together.

And that with Macintosh you can build systems that let even nontechnical users access information from the desktop, no matter where that information resides.

And because Macintosh works with all your networks, databases, and hosts in one consistent and graphic way, it delivers major savings in implementation and training.

In short, Macintosh gives you the power to make information systems more valuable to the people who use them. The power to be your best.®

Macintosh gives people a single, simple view of the information and services that can help them do their jobs and serve your organization. See for yourself. Call 800-635-9550, ext. 553, and we'll send you a free video showing how Macintosh helps unify complex systems.

ADVANCED TECHNOLOGY

Robots master complexity with machine vision

Technological advances provide robots with ability to measure tiny components, inspect checks for accuracy

BY SALLY CUSACK
CW STAFF

The robots that first set up shop on factory floors went blindly about their business. Today, firms are using robots that are capable of "seeing" what they are doing with machine vision.

Thanks to advances in parallel processing, supercomputing, lasers, sensors and digital video capabilities, machine vision will continue to improve dramatically in the next few decades — empowering robotics for even more delicate and complex tasks.

Machine vision systems vary according to application, but the basic setup consists of a video camera connected to a high-speed computer. Information gathered by the camera is analyzed and processed by the machine using sophisticated artificial intelligence technology.

Patrick N. Henry has been integrating visual capabilities into robotics inspection systems at Wagner Lighting in Sparta, Tenn., for the past two years. The company makes lighting component parts for use in automobile speedometers and other dashboard apparatuses.

Henry, an electrical systems engineer, purchased low-resolution vision systems from Allen-Bradley Co. four years ago to check component parts on the assembly line.

Wagner has since added two higher resolution detection systems for actual component measurement. The components are tiny — less than an inch in height and width.

"We used to have a person sitting at the end of the product line, glancing at every part to make sure everything looked normal," Henry said. Exact parts measurement data is recorded for each piece via a machine vision system from Adept Technology, Inc. in San Jose, Calif.

The machine is programmed to measure components against the original drawing specifications. It detects the slightest inaccuracies and guarantees that a faulty product does not leave the factory.

According to Cognex Corp., a vision systems company based in Needham, Mass., the accuracy of machine vision has been improved by advances from black-and-white processing to gray-level image processing.

Performing gray-level comparisons, the system factors out variations in contrast between actual image data and stored image data. This allows the system to tolerate lighting changes from aging light bulbs or time of day in factories.

While most Cognex customers integrate the company's vision systems for circuit board inspection and manufacturing, there are other, less obvious uses for the technology.

John Hancock Mutual Life Insurance Co. in Boston uses a Cognex machine vision system. The system is integrated with Hancock's printing equipment to inspect checks as they leave the printer.

Timothy Carroll

According to Cognex, Hancock prints between 15,000 and 20,000 checks each evening, and using the vision technology, the entire inspection process is completed in less than 1.5 milliseconds per check. If any problems are detected, the system signals the printer to stop and flashes an error message on the monitor.

A long wait

The technology is not perfect, and it will be 20 to 40 years before scientists will be able to replicate human vision on a robotic platform, said Robert Fisher, lecturer in the Department of Artificial Intelligence at the University of Edinburgh in Scotland. "The main problem is interpreting the quarter of a million to 1 million data values captured by a single camera," Fisher said. "That is hard to do in real time."

Machine vision technology has many potential applications, Fisher said. It could be used in nuclear reactor welding and spray painting, among other potentially hazardous work. Undersea vehicles could be equipped with machine vision to conduct explorations of ocean floors. The medical community is also looking at vision systems to improve body scanning procedures.

Multimedia's power, utility bear fruit in Virtual Notebook System

BY GARY H. ANTHES
CW STAFF

Jill Helms, a neuroscientist at Baylor College of Medicine in Houston, said she could never go back to using the traditional laboratory notebook with the stained pages, dog-eared corners and handwritten entries because she and six colleagues are using an experimental version of the Virtual Notebook System (VNS), a multiuser hypermedia system for networked, Unix-based, X Window System workstations.

VNS allows a user to navigate through pages of information, capturing new information from windows, files, electronic mail and programs, then organizing, annotating and sharing the information with others who may be thousands of miles away. The notebook's electronic pages can hold images, text, audio, video stills, navigation links to other pages and notebooks and action links that trigger external programs.

For example, a researcher at Baylor logs on in the morning and finds news stories that were added to his notebook overnight from wire services based on his predefined interest profile. Next, he sends a request for bibliographic information to a medical library thousands of miles away. Literature references come back, and he sends an electronic form holding the citations to his local campus library, where the articles are photocopied and sent by fax back to a message queue on his workstation.

Using a fax-previewing tool, the scientist copies and pastes sections of the fax from a window into a page of his electronic notebook. From a university library, he transfers a file of editable text to a window in his workstation, then sweeps relevant portions of it into his notebook.

To round out the research for the day, he locates a color photograph of the human brain on a laser-disc video system at another library on the network. He loads that into an image editor and annotates portions of it with text labels. He also attaches an audio icon to one region of the brain and records a voice message through an attached microphone. Then he pastes the annotated brain picture into his notebook, now stored in part on an attached video recorder.

Before closing the notebook, the researcher sets permission flags indicating which colleagues at his facility or elsewhere on the vast Internet have permission to use his electronic book.

Several companies, including BP Research, a unit of British Petroleum, and another oil company are evaluating VNS. BP is looking for a way to instantly exchange multimedia information among its sites around the globe.

"We are looking into collaborative technologies, ways to make information more manageable and accessible to a lot of people," said Douglas MacIntosh, a BP Research engineering specialist. "VNS is not just for research. We envision numerous groups in BP being able to take advantage of this technology."

According to Kevin Long, co-developer of VNS and a member of the Information Technology Program at Baylor, VNS may find use in litigation support, insurance appraisal and claim management, real-time conferencing and other situations in which processing and information resources and personnel are geographically dispersed.

VNS will be offered commercially this fall through Groupwork Systems, Inc., a Baylor subsidiary.

Taking note

The Virtual Notebook Environment includes the following:

The Virtual Notebook Environment

Virtual Network System (VNS) is written in C for Unix-based workstations running X-Window System attached to TCP/IP networks such as Internet.

Information in VNS is managed by a relational database back end, either Sybase, Inc. SQL Server or NDBM, a set of Unix database library routines. It includes an Application Developer's Interface to allow user-supplied programs to access and manipulate information in the VNS.

VNS will run on workstations from Sun Microsystems, Inc., Digital Equipment Corp. and IBM.

CW Chart: Janell Genovese

Who just fit Mainframe Power in a pizza box? Data General presents the AViiON 7000 and 8000 systems. (Ready for delivery today!)

We've just sliced mainframe power down to size.

Data General's AViiON 7000 and 8000 systems have 117 MIPS of mainframe power that fits in a pizza box! That's right. The brains of these next-generation Open Systems occupy the same space as your basic large pie. Thanks to our new disk array technology, you can get an amazing 48 gigabytes of storage on fault tolerant disks. Best of all, this mainframe power is yours for a price starting at less than $100,000– and it's available right now! And we don't scrimp on software. These binary compatible UNIX-based systems support all the leading databases, business applications and communications software. Through advanced symmetric multiprocessing, AViiON offers large scale commercial system performance that used to take up a whole room. With both our AViiON Open Systems or our ECLIPSE Family, Data General's 22 years of mastering technology has been making life easier for a lot of people. Now it's your turn. For more information call

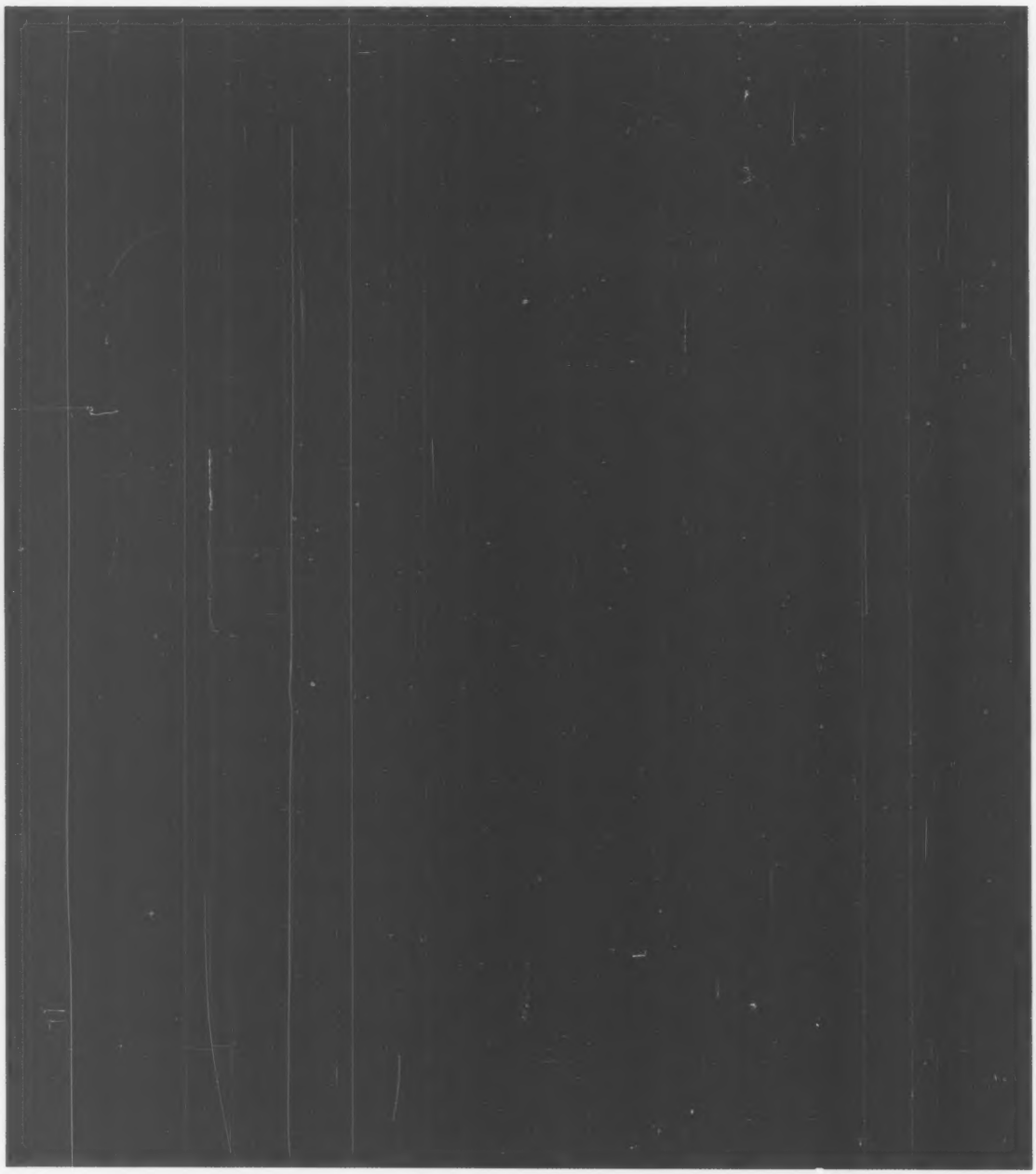
1-800-DATA GEN

Life just got a whole lot easier!

© 1991 DATA GENERAL CORPORATION

1975 *Launched the first U.S. public data network.* 1979 *Built the first commercial private packet network.* 1980 *Created the first hybrid network using private and public capabilities.*

MADE FOR IBM.

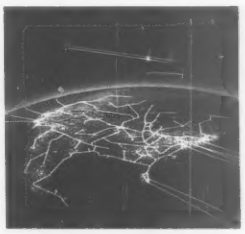


1988 *Sprint completes the only nationwide 100% digital fiber optic network. Awarded 40% of Federal Telecommunications System 2000 contract.* 1989 *World's first and largest*

1985 *Sprint introduces the world's first VPN.℠* 1986 *First transcontinental fiber optic call transmitted by Sprint.* 1987 *Eight million FONCARDs℠ distributed in first year.*

MADE FOR IBM CONNECTIVITY.

The Sprint® network. It has 100% digital switches. And 100% fiber optic transmission. Nationwide. And from the very beginning, it was made to send data.



Especially data that comes in large blue blocks. Because we have solutions for networking everything from mainframes to mid-range systems to LANs. Including SNA backbones, peer-to-peer networks, and remote-to-host connectivity.

We also give you circuit switched, packet switched, or private line technologies. Virtual or dedicated configurations. And real flexibility for future growth.

If you'd like to know more, call us at 1-800-800-1522. We'll have detailed information in your fax machine in minutes. And we'll show you the right way to connect IBM systems. On a network that was literally made for them.

Sprint.
Made for data.™

© 1991 US Sprint Communications Company Limited Partnership. ® IBM is a registered trademark of International Business Machines Corporation.

privately-owned transatlantic fiber optic cable completed. 1990 *Sprint announces first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.*

EDITORIAL

Rights to privacy?

It all seems so innocent.

In order to qualify for the one-year guarantee on that new stereo, you have to fill out a card and send it to the manufacturer. The card has lots of questions, relating not only to your music listening habits but also to your spending habits, your income, your family and other personal things. But what the heck, it's just a guarantee.

If only that were true. The information you've provided is fodder for an endlessly expanding group of list-purchasing direct marketers who fill mailboxes with postal pollution. Or call you on the phone at home or at the office with those computerized pitches we all love. Or send mailings to the children, ages eight and ten, who you listed on that innocuous guarantee.

Clearly the worst is yet to come. A rapid decline in storage costs and great leaps in relational database management system technology will enable anyone with the system and the desire to compile, configure and decipher enormous quantities of information on individuals. And the rules on what can be done with such information are not clear.

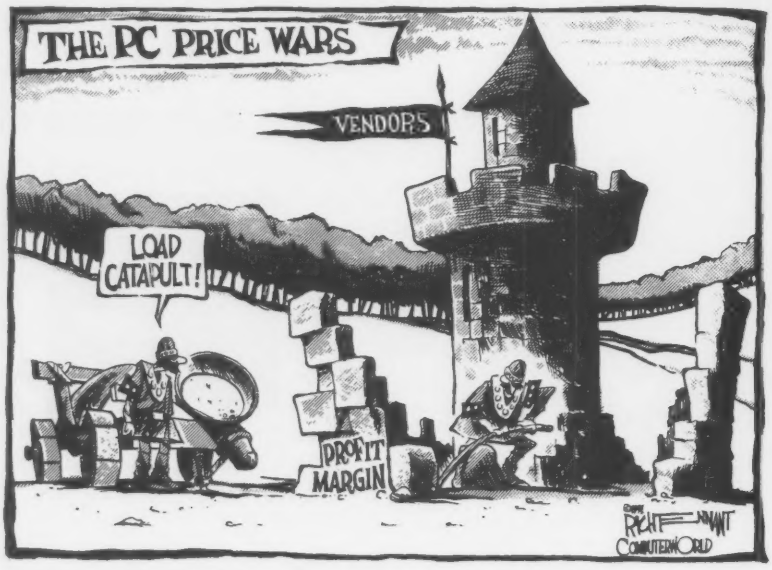
The potential for privacy invasion in the 1990s is simply enormous. Already the courts are struggling to deal with privacy issues being raised by technologies such as automatic telephone number identification. The business value of this technology is significant — but so is the potential for abuse.

The dangers of information gone awry have been well-documented. Business press reporters have been shocked at the quantity of information they can purchase from credit-checking vendors. Far too often, this information is incomplete or just plain incorrect, yet it is taken at face value by mortgage companies and other businesses.

There are some privacy advocates who have at least slowed the implementation of technologies such as automatic number identification. But for the most part, the proper checks and balances are not in place. Instead, the courts and federal government are relying on the KISS (keep it simple, stupid) factor, allowing business essentially to self-regulate its use of the technology.

But if anyone doubts the ability of the unscrupulous to trample individual rights in the face of loose or no regulation, you have simply to recall the countless scams that have cropped up around 900 phone numbers. That business concept was considered harmless when it first came on the scene.

However, it is not necessarily government that should state the terms of regulation and control. Companies with legitimate business needs should step to the forefront and help legislators understand the great potential for the computerized abuse of what is arguably our most important right in a free society. In that way, any controls and restrictions on the use of data will take into account both the rights of individuals to privacy and the rights of corporations to conduct fair business.



LETTERS TO THE EDITOR

Leaders needed

While Microsoft needs no support from me, the attitude expressed in your April 22 editorial is yet another example of how American business and media promotes mediocrity.

The OS/2 Windows situation is more an expression of the effectiveness of the Windows approach and the ineffectiveness of OS/2 than of anything Microsoft has done.

Would everyone love Microsoft if it had focused only on OS/2 and let some other vendor develop Windows? Not likely — particularly Microsoft's stockholders. At your suggestion of putting the MS-DOS standard in the public domain — would you, if it was yours?

My congratulations and respect to the Microsoft team and its leadership. May more companies emulate its style and its success.

George Pitagorsky
Pitagorsky Consulting, Inc.
New York, N.Y.

Down on Microsoft

Regarding your editorial "Blind ambition" [CW, April 22], I frequently run into the brick wall of Microsoft's monopolistic policies. For example, I recently attempted to resolve a problem with Windows HIMEM.SYS on a Compaq 386. Microsoft technical support's only suggestion was that the client dump the software that didn't work with Windows (translation: every productivity tool not purchased from Microsoft).

The client decided instead to dump Windows. Please log my vote in favor of a federal ruling that forces Microsoft to cease all activities in the field of hardware and application software.

It is time to send a clear warning that growth is OK. Corporate arrogance is not.

Daniel A. Morgan
Morgan Information Systems
Bellevue, Wash.

Bad restrictions

Having watched federal information policy become increasingly restrictive during the past decade, I read "A $46 tape becomes a $10K print job" [CW, April 29] with great interest. The manner which government agencies use (or abuse) computer technology is an important policy issue that needs to be addressed.

While it is true that the Freedom of Information Act (FOIA) came into being at a time when virtually all federal records were maintained on paper, the underlying principle of the legislation — that the people have a right to know what their government is doing — should apply regardless of the medium in which information is stored. Several agencies have applied that spirit of openness to new information technologies and improved the public's ability to access records.

The Department of Justice, which sets FOIA policy governmentwide, must accept responsibility for these inconsistent federal information practices. It is time for the Justice Department to provide leadership and ensure that emerging technologies will be used to enhance, rather than frustrate, the public's right to know.

David L. Sobel
Computer Professionals for Social Responsibility
Washington, D.C.

Work together

In regard to "A $46 tape becomes a $10K print job," [CW, April 29], I don't know whether to laugh or cry. In some ways, I hope the New York City Buildings Department wins its case. Can you imagine the donnybrook at the IRS if all businesses could use the court case to send "printed submissions."

If I was employed by the IRS, I would be an amicus curiae for Brownstone Publishers. Isn't it wonderful and delightful how some government agencies can shoot fellow agencies in the foot. I love it. Come on — can't we work together to have reasonable responses for requests for information?

John W. Eoff
New Mexico State University
Las Cruces, N.M.

Intel opposition

Just a short note to voice my displeasure with Intel over its plan to sell a 486SX chip. Either let it be the true 486 with cache, floating decimal and math coprocessor or let it be nothing. I wish that we as a people would stand up and say no to Intel about what it is doing.

Joe Sprinkle
Detroit, Mich.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

More Up-to-the-Minute News!

51 Issues for ~~$48~~ NOW ONLY $38.95

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues.
That's a savings of over $9.00 off the basic subscription rate.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

*U.S. Only. Canada $58.97, Central/South America $130, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
75. User: Other
95. Vendor: Other
(Please specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
60. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
61. Sales & Mktg. Management

COMPUTERWORLD
IS sites hear rumble of war
Officevision on hot seat as SAA boss takes over
Windows role to grow
Morris case impact slight
VDT monitoring under stress
INSIDE

OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Librarians, Students
90. Others
(Please specify)

3. **COMPUTER INVOLVEMENT** (Circle all that apply)
Types of equipment with which you are personally involved either as a user, vendor, or consultant.
A. Mainframes/Supermnis
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
F. No Computer Involvement

E4122-2

Recyclable Paper

More Integration Strategies!

51 Issues for ~~$48~~ NOW ONLY $38.95

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues.
That's a savings of over $9.00 off the basic subscription rate.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

*U.S. Only. Canada $58.97, Central/South America $130, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
75. User: Other
95. Vendor: Other
(Please specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
60. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
61. Sales & Mktg. Management

COMPUTERWORLD
Microsoft, IBM diverge on OS/2 direction
DEC faces rocky road in service shift
INSIDE

OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Librarians, Students
90. Others
(Please specify)

3. **COMPUTER INVOLVEMENT** (Circle all that apply)
Types of equipment with which you are personally involved either as a user, vendor, or consultant.
A. Mainframes/Supermnis
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
F. No Computer Involvement

E4122-2

Recyclable Paper

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-2144

OS/2 and Windows: The war that isn't

CHARLES P. LECHT

OS/2 isn't dead, or even seriously ailing, despite the many public proclamations of its imminent demise.

Just a few short months ago, enthusiastic and jeering Unix supporters were celebrating the end of OS/2. It didn't matter to those folks that they weren't quite sure what they were supporting as its successor. They were quite sure that, whatever it was, it was better. Now, Unix has faded into the background and we hear that the "resurrected" Windows alternative will seal OS/2's fate.

Most people have forgotten that Windows is about as old as DOS and that, like Unix, incompatible versions abound. What's important is the momentum. Everybody is claiming to offer Windows, so you'd think it was about to engulf us.

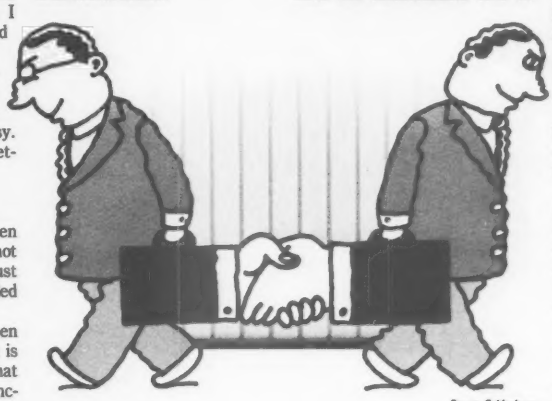
One thing I've noticed, though, is that big waves often break fast. A hard sell often means that the product isn't going to last very long, and personally, I don't think the current Windows product (or should I say products?) will be around long.

As I see it, IBM and Microsoft have to be laughing all the way to the bank over the OS/2 vs. Windows controversy. Talk about carving up a marketplace!

What a coincidence

You may think I'm kidding when I say this, but I'm not. I'm not suggesting collusion, either; just a coincidence of interests aided by a lot of misinterpretation.

That the two firms have been working together a long time is an unquestionable fact. That IBM and Microsoft were financing OS/2 is no secret. We cannot know the terms of this working arrangement; it shouldn't be surprising if we were to learn that the majority of the financing came from the bigger of the two. That OS/2 offers a quantum leap in the effective use of today's high-powered small computer over that possible through DOS is no secret either.



Stuart Goldenberg

So where does Windows fit in? Well, some people aren't ready to take a quantum leap, so they'll use the Windows stepping stone.

Some people may have noticed that Microsoft's current version of Windows and IBM's OS/2 Presentation Manager are converging. In this I think we have the unmistakable clue of what the Windows product is. No one has argued that using OS/2 is as easy as using DOS; compare driving a Volkswagen Beetle with a 959 Porsche to appreciate this. But, which would you rather have on an open road? All right, if you can't drive a Porsche, try driving something like a Honda.

Windows, like the continuing versions of DOS, are bridges to OS/2 for those of us who don't like to get our feet wet too quickly. Managing to bring a monumental work like OS/2 to the marketplace can't be easy if the work is being done in two companies, although for all the claptrap regarding the IBM-Microsoft rifts, it's my view the two have done remarkably well thus far.

While I am certainly not privy to IBM/Microsoft meetings, I can imagine the possibility of one where the conversation went something like this:

"You take the bridges, we'll take the rest."

"No problem, but, how will we explain our new direction?"

"It's easy. Sell them on bridges for the moment!"

"How about Windows?"

"Fine. Call them whatever you want."

Lecht is an IDG News Service foreign correspondent based in Tokyo.

IBM should remember that shots can ricochet

KENNETH A. BOULDIN

If IBM wins the lawsuits it has filed against some independent computer lessors, the defendants and their customers will not be the only losers. It is IBM that stands to suffer the greatest injury — and from self-inflicted wounds.

Earlier this year, IBM and its financial subsidiary, IBM Credit Corp. (ICC) filed suit against Comdisco, Inc., Cambex Corp. and EMC Corp. Although Cambex settled out of court, the remaining suits charge that the other two defendants removed memory and other parts which were subsequently subleased or placed for sale.

As a result, according to the lawsuits, many machines returned to ICC at lease end are not the same as those at lease inception because some components would not be the original ones. In other words, lessors and lessees who remove any parts from ICC-owned equipment during the term of the lease must put those very same parts back in the equipment when the lease is up — or risk being sued by IBM.

IBM is taking a position that directly contradicts accepted industry practice. Lessees have long taken for granted the idea that equivalent replacement and reconfiguration parts — so-called "plug-compatibles"— are equal in value to the original components and therefore do not alter the original asset. In fact, the free movement of equipment parts and subleasing go to the very heart of the computer leasing and remarketing business. Few companies looking to expand can afford to strand their investments in their original computer equipment or to make huge outlays for new equipment.

IBM's hidden agenda

One doesn't have to be a lawyer to discover the hidden agenda in the IBM lawsuits. In 1989, the computer leasing and remarketing industry had a dollar volume of $21.5 billion, and the figure for 1990 is expected to be $25 billion. IBM apparently wants more than its fair share of the pie and hopes to get it by warning customers away from doing business with other firms.

IBM's current actions are reminiscent of previous tactics against the independents.

In 1987, IBM tried to impose a transfer fee for the maintenance of its equipment. At the same time, the company closed some of its distribution centers, an obvious attempt to restrict the sale of parts. The Computer Dealers and Lessors Association, with help from the U.S. Department of Justice, persuaded IBM to rescind the transfer fee and reopen its parts centers.

Shortly thereafter, IBM added a licensed internal code provision to its purchase contracts, asserting that microcode constituted intellectual property and therefore was subject to copyright laws. However, last year, a district judge found that IBM's actions with respect to "splits" of IBM 3090s violated the 1956 Consent Decree.

One of the most important provisions of that same decree is the stipulation that IBM cannot prohibit, or in any way subject to its control or approval, alterations in or attachments to an IBM machine.

The independents are turning IBM's efforts to spook customers away from doing business with other companies into terrific marketing tools. They are warning customers that if they do business with IBM, they may very well be locking themselves out of the ability to upgrade at fair prices. As a result, many customers are beginning to avoid IBM equipment in the first place.

Customers know that an IBM victory will inevitably erode competition in the computer leasing market. A recent Gartner Group, Inc. survey of 250 users in 10 cities found that 30% are less inclined to do business with ICC as a result of the lawsuits. As one Gartner Group executive put it, "IBM may have shot itself in the proverbial foot."

Bouldin is president of the Computer Dealers and Lessors Association in Washington, D.C.

Ever heard of prevention?

You don't need a problem to justify research

READER'S PLATFORM

ROBERT GORDON

I am amused by the recent rash of articles giving advice on how to run a corporate emerging technology group. All of them seem to have been written by the same person, and the messages are as myopic as they are redundant.

The theme is usually that most such groups are staffed by "overzealous technologists [as if technologist was a dirty word] unschooled in the ways of business" and engaged in looking for "problems to fit solutions."

The "solutions in search of problems" admonition implies that every potential application of new technology should be clearly related to a known business problem at the outset. In fact, successful applied research is most often preceded by basic research. Many significant implementations of emerging technology started off with people "noodling around" in their "ivory tower environments."

Valuable new applications do not always originate with someone exclaiming, "We've got a problem." Often, those who stand to benefit the most from an application of advanced technology may not even realize that there is a problem waiting for a solution.

A busy executive, for example, may not consciously recognize using a keyboard to access a decision support system as a problem. Only when shown a prototype executive workstation with fast, powerful graphics, voice and handwriting recognition and neural network technology to customize the system to his needs will the executive realize how much of his valuable time has been wasted each day tediously navigating complex keyboard commands and menu structures.

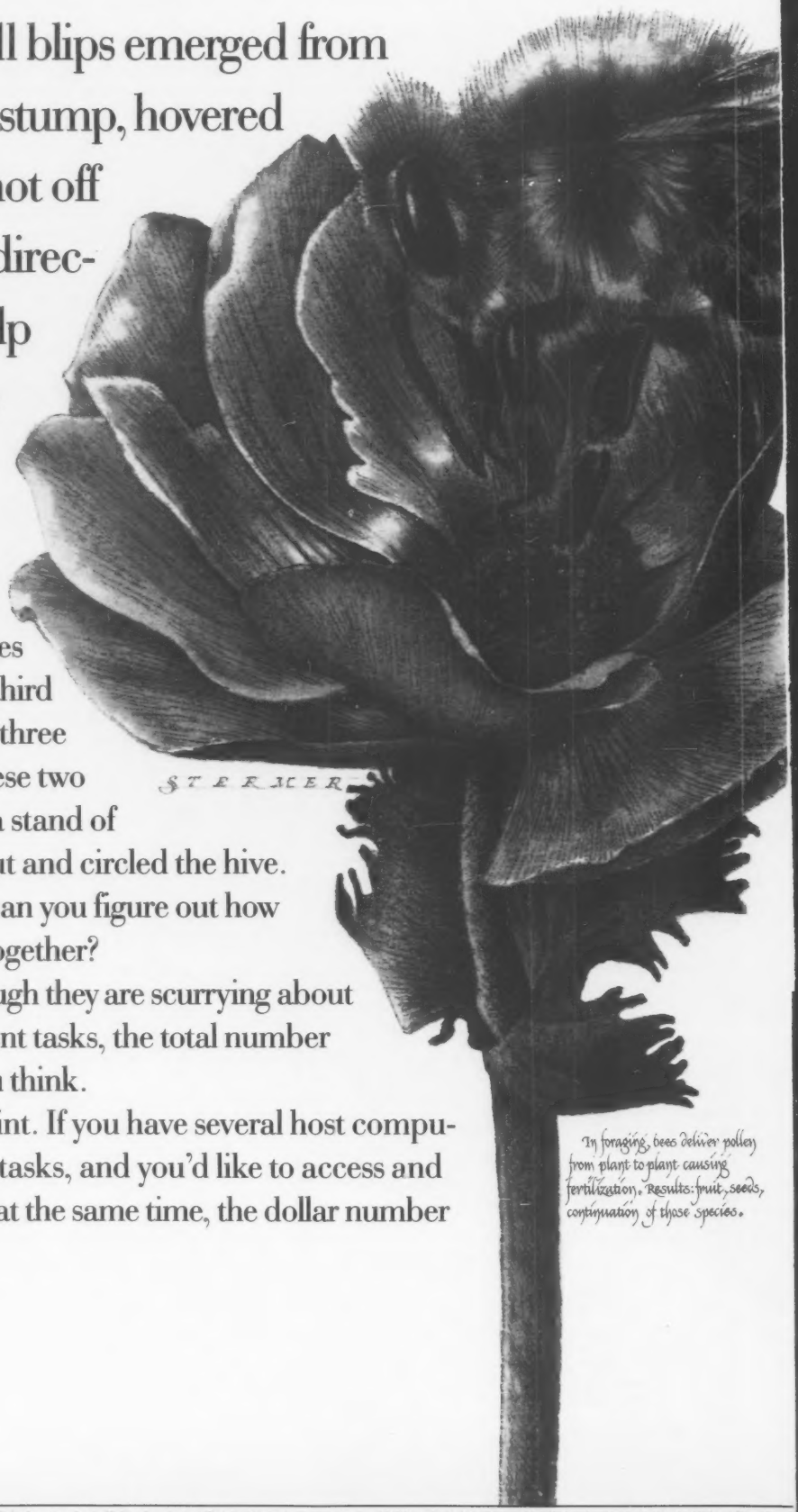
Granted, some emerging technology groups have not focused on organizational goals. The solution, however, is not to demean the activities of this important strategic function in general, but to encourage emerging technology management to develop a charter that aligns group goals with those of the organization.

Efforts should be balanced between examining significant new technological developments in order to determine how they might fit with organizational goals (solutions looking for problems) and mapping out specific strategies to meet recognized needs within the organization (problems looking for solutions).

Both approaches are valid and important. An organization that religiously restricts either (or worse, both) and elects to watch from the sidelines while the competition moves first, is going to be watching from behind.

Gordon is an information technology consultant in Parsippany, N.J.

Several small blips emerged from the hollow stump, hovered briefly, then shot off in different directions to help sustain life on earth.



One-fifth of these worker bees flew to a cherry tree, one-third flew to a clover field, and three times the difference of these two numbers buzzed over to a stand of heather. One just hung out and circled the hive.

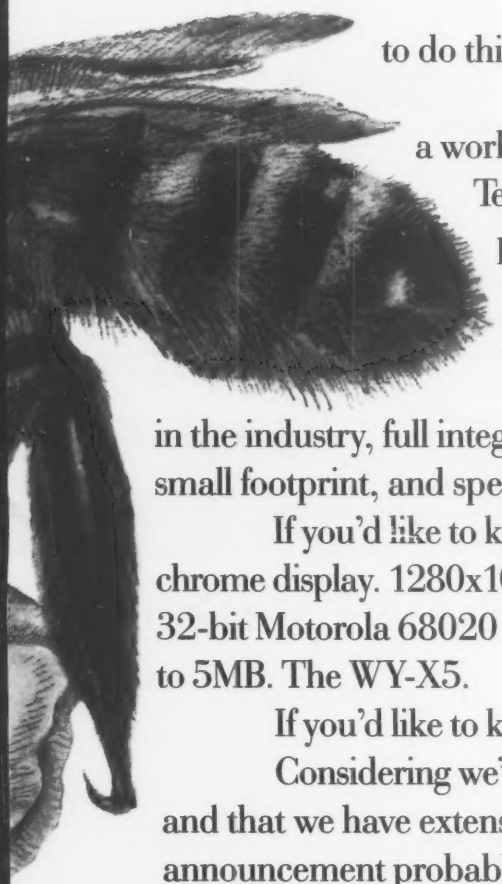
The question is, can you figure out how many bees there were altogether?

Here's a hint, though they are scurrying about working on several different tasks, the total number could be smaller than you think.

Here's another hint. If you have several host computers working on different tasks, and you'd like to access and display their information at the same time, the dollar number

In foraging, bees deliver pollen from plant to plant causing fertilization. Results: fruit, seeds, continuation of those species.

© 1991 Wyse Technology Inc. WYSE is a registered trademark and WY-325 is a trademark of Wyse Technology Inc. The X Window System is a trademark of the Massachusetts Institute Of Technology. Motorola is a registered trademark, and 68020 is a trademark of Motorola Corporation. UNIX is a registered trademark of American Telephone & Telegraph.



to do this could be smaller than you think. A lot smaller.

Because not only can you accomplish this without a workstation, you can now accomplish it with a Wyse X Terminal. Meaning, finally there's an X Terminal with premium features at an un-premium price. Or, conversely, finally there's a low-priced X Terminal with much more than bare bones features.

For example, the most advanced ergonomics in the industry, full integration of electronics and logic into one housing, a small footprint, and speed. Lots of speed.

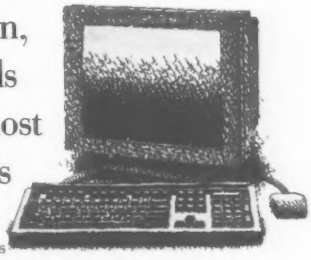
If you'd like to know some additional numbers, try these: 17″ monochrome display. 1280x1024 resolution. 70Hz flicker-free refresh rate. 16MHz, 32-bit Motorola 68020 microprocessor. 1MB display memory expandable to 5MB. The WY-X5.

If you'd like to know the number of bees, try the footnote.

Considering we're the largest independent manufacturer of terminals, and that we have extensive expertise in UNIX multiprocessor systems, this announcement probably won't come as a surprise to anyone. But, to all those who have priced quality X Terminals, it should come as a welcome relief.

Of course, if you'd rather use a PC as an X Station, here too Wyse has several models to choose from. Some say the most powerful, price-competitive PCs in the industry. And who are we to argue?

If you'd like additional information on our new X Terminal, or for the name of a local reseller, call 1-800-GET WYSE. And if you'd like more Cerebral Aerobics, call for our free wall poster with 13 additional mind-stretchers.



The Wyse X Terminal has arrived. With all electronics and logic integrated into the housing. And with other typical Wyse pluses like superior display, advanced ergonomics, small footprint, raw speed and a refreshingly manageable price. The WY-X5.

But either way, Wyse can help you come up with the right solution.

So rather than being among those who are talking about all the benefits of using X, you can be among those who are actually enjoying them.

WYSE

To make sure you aren't tempted to peek at the answer, we won't print it here. But we will print the secret phone number you can dial to hear the recorded answer. No sales pitch, no strings. We'll call it our Re-line: 800-669-1453.

SOFTWARE AG helps Burlington Air Express keep track of the little things.

When you move unusual cargo, you can't let it slip through your fingers. Case in point: the whale Burlington Air Express once transported via a 727 from Oakland to San Diego.

Burlington specializes in shipping freight of all shapes and sizes across the U.S. And whether it's massive mammals or mahogany desks, every step of every journey must be carefully tracked.

That's why Burlington looks to SOFTWARE AG. Using NATURAL and ADABAS, our 4th Generation Technology and adaptable database manager, Burlington is able to create information systems that are more flexible than the hierarchical databases which have been popular in the market.

James C. Smallman, Burlington's Senior VP of Information Services, says that one of the company's major needs is to act as an extension of its customers' systems. Because those clients use a variety of computing environments, "the ability of SOFTWARE AG products to communicate with different operating systems and hardware is a real plus."

Smallman also extols the speed with which applications are developed using SOFTWARE AG technology. He reports that, thanks to NATURAL and ADABAS, an important project was completed in just 500 hours instead of the projected 1,100. "SOFTWARE AG really offers a better way to manage our business," concludes Smallman.

That statement goes for thousands of other companies as well. And that's no fish story. To learn more, call 1-800-843-9534. (In Virginia, call 703-860-5050; in Canada, call 519-622-0889.)

Your success is how we measure ours.

SOFTWARE AG

©1991 SOFTWARE AG. NATURAL and ADABAS are registered trademarks of SOFTWARE AG.

COMMENTARY

Rosemary Hamilton

DB2 rising to the top?

If you need some proof that IBM's DB2 is the established standard in the mainframe relational database world, a stop at the International DB2 User Group (IDUG) Conference, held in San Francisco last month, might have done the trick. The conference was IDUG's third meeting, and it attracted almost 1,600 attendees, up from approximately 1,000 one year ago. Conference directors are planning an international meeting for next year and are predicting that about 2,000 attendees will show up at next year's U.S. meeting.

This year's meeting bears witness to the increasing number of IBM customers committing to DB2 as their strategic database of the future. Current IDUG President William Backs said IBM is shipping about 1,000 copies of DB2 per year.

However, it is not so much the numbers as what users are talking about that shows how DB2 has matured as a mainstream DBMS. It has moved beyond the phase of being a new and untrusted product. Instead of discussions on the pros and cons of relational technology, users seem more interested in discussing overall IS issues as they apply to DB2. Concerns such as continuous availability, or "24 by 7," as some users like to say, are common among large shops now. This may sound boring, but DB2 is becoming just a DBMS with which

Continued on page 34

IBM redefines its Unix CASE strategy

ANALYSIS

BY JOHANNA AMBROSIO
CW STAFF

IBM's strategy for providing software development tools on its RISC System/6000 platform recently took another twist. But although the company's plans for the technical market are now better defined, things are not quite as firmed up on the commercial side of the RS/6000 house.

IBM RS/6000 users seeking to develop engineering, embedded systems and other technical applications will soon have another suite of tools to choose from. In April, IBM announced it had licensed Hewlett-Packard Co.'s Softbench integration framework, which provides a common interface and communication among software development tools. IBM and HP will port Softbench to the RS/6000.

"This is a short- to medium-term fix on the technical side of things," said Frank Gens, an analyst at Technology Investment Strategies Corp. in Framingham, Mass. Also, he said, IBM's restricting Softbench to just the technical side "is disappointing. It could cause concern and confusion."

John Kneemeyer, IBM's technical computer-aided software engineering (CASE) marketing manager in White Plains, N.Y., said IBM has "just completed a market research study of the demand by commercial customers, and now we're determining what to do." Although there is a need here, the demand appears to be less acute than on the more established technical side, which IBM said has two-thirds of the RS/6000 user base.

Ralph Hirtler, a systems programmer at Republic National Bank in New York, said his company is beta-testing some RS/6000s as branch systems. "We're not developing the software in-house, so we don't really need CASE tools," he said.

Making a CASE

IBM's plans for computer-aided software engineering on the RISC System/6000 include the following:

Technical development (engineering, embedded systems)

- **Low end:** Hewlett-Packard Co.'s Softbench integrating technology and associated third-party software. Deal to port this over to the RS/6000 recently announced; not yet delivered.
- **High end:** Atherton Technology's Integrated Project Support Environment and associated third-party tools. Currently available, but requires a higher level of investment than does Softbench.

Commercial development (business applications)

- **Nothing in stone just yet:** At this point, IBM seems to be leaning toward providing the integration between the RS/6000 and its other systems and looking for third-party vendors to provide the specific tools, as with AD/Cycle.
- **Long term:** IBM executives have promised a suite of tools for the RS/6000 that are very similar to those available for AD/Cycle.
- **In the meantime:** Third-party software runs on the RS/6000 but lacks any formal direction or integration from IBM.

CW Chart: Doreen St. John

Not large demand

Joseph Bastable, director of sales and marketing information systems at Liz Claiborne, Inc. in New York, said there is not yet a pressing need for development tools.

It is possible, observers said, that IBM will use the Softbench technology for both worlds. In the future, the RS/6000 software development environment — whatever it turns out to be — will be linked with the Repository Manager on the mainframe.

Mike Saranga, assistant general manager of IBM's Systems Structure and Management Group in Somers, N.Y., said in a March interview that the goal is to allow RS/6000 and mainframe developers to use the same

Continued on page 39

Changes coming for graduated pricing

BY ROSEMARY HAMILTON
CW STAFF

IBM plans to adjust its software pricing structure, a company executive said recently.

Several high-end users should welcome the move. They claim IBM's graduated pricing structure has long been unfair to users of larger processors.

Graduated pricing, which IBM began in the late 1980s, charges higher license fees for larger systems.

In a recent interview, Robert Goldberg, IBM's assistant general manager for software marketing, said the company intends to change pricing structures that would create fees based on the program's value.

"I guarantee we will be putting out some structural changes," he said.

Some customers have long argued that while this is a fair policy for operating systems, it should not be applied to applications and other software.

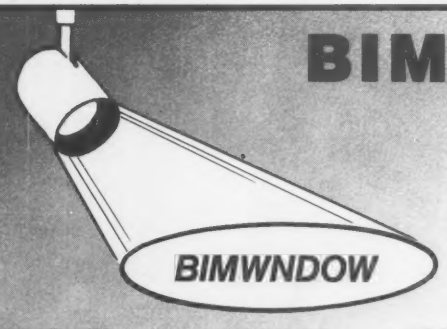
"I hate the tiered pricing approach," said David Moore, a senior vice president of information systems at Mellon Bank Corp.

Reassessing options

James Matsey, corporate director of MIS at Reynolds Metals Co., said the graduated pricing has caused him to think hard about where to put his software. As an example, Matsey said he wanted to install an imaging program from IBM on a larger Application System/400 model. But only a handful of users would actually be using the software. Matsey said he thought it was unfair to charge a price that corresponded to hardware rather than its actual use.

"I have all big AS/400s," Matsey said. "So to buy this [imaging package], I would have to pay for the large machine. We made a decision that we won't pay that kind of money, and we will just put it on a microprocessor."

According to Goldberg, software pricing is a complex issue, and in order to arrive at value-based fees, IBM must take into account the number of users as well as the amount of time a company actually runs a program.



BIM Spotlight

Wouldn't it be nice to have a couple more terminals on your desk?

You could eliminate the inconvenience, lost productivity, and system overhead associated with logging off and on to different applications!

BIMWNDOW permits multiple terminal sessions to be active concurrently at the same physical 3270 CRT, under **DOS** or **OS** VTAM. The user may switch back and forth **instantly** between the terminal sessions by hitting a PA or PF key. The terminal sessions may be in the same or in different VTAM-connected partitions/regions. For example, one session might be logged on to a CICS partition or to TSO to do program editing, and another session connected to a test CICS to test the application program being developed.

Now with 3270 data **compression** built in!

Call for full documentation or **free 30-day trial.**

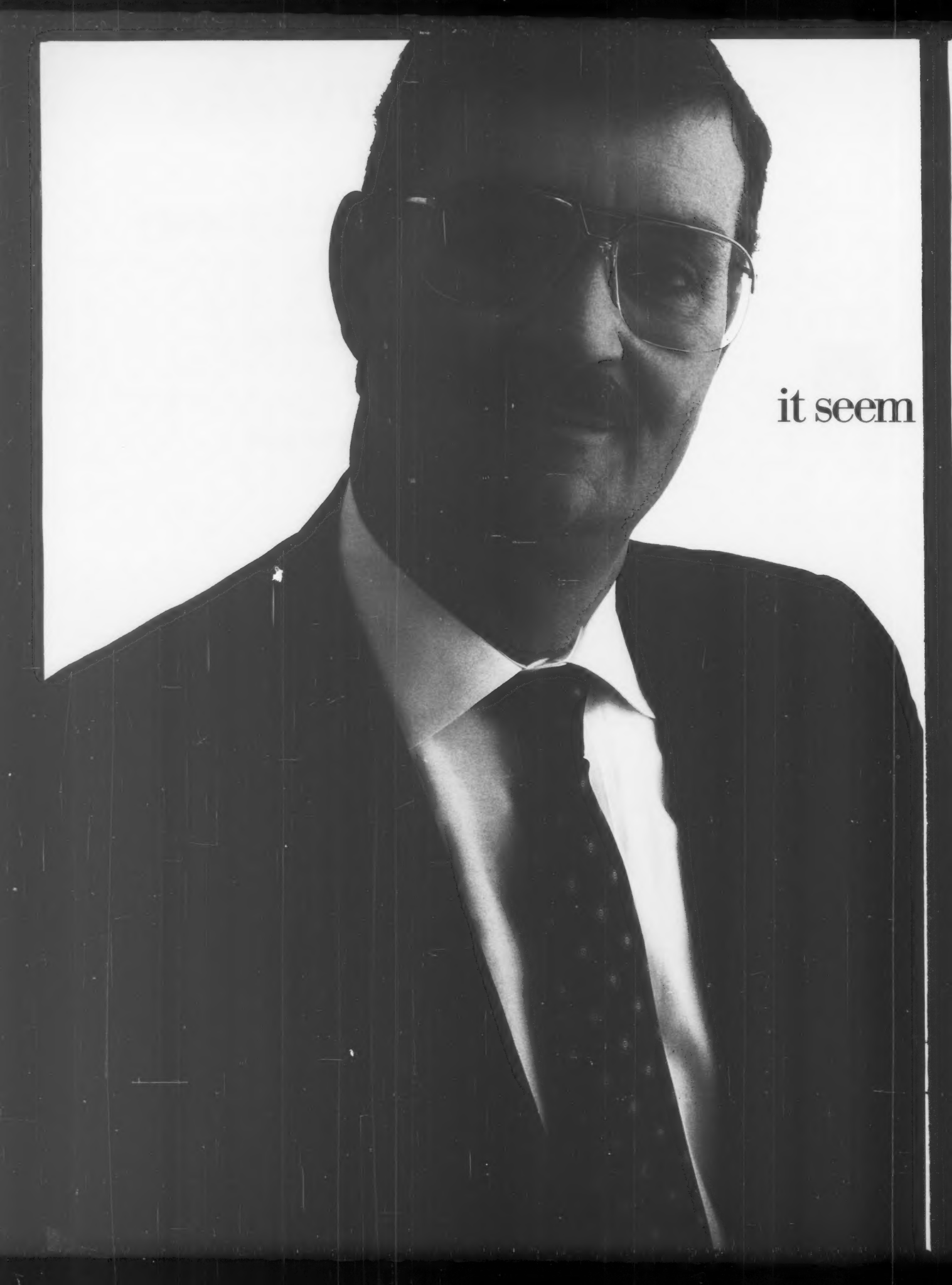
Price: OS — $5600 or $280/mo., DOS — $2800 or $140/mo.

BIM has 15 system software products for improving productivity and use of DOS/VSE, OS, and CICS, and also performs systems programming consulting. Marketing agents in most countries.

BIM® B I MOYLE ASSOCIATES, INC.
5788 Lincoln Drive
Minneapolis, MN 55436

612-933-2885
Fax 612-933-7764

Member Independent Computer Consultants Assn.


it seem

"OfficeVision fit our plans so perfectly, ed as if IBM had been reading our minds."

Frank Fitzsimmons
Director, Judicial Information Systems
17th Judicial Circuit Court of Florida

The idea for IBM OfficeVision™ wasn't born in a Fort Lauderdale courthouse, but it could have been.

The story begins in 1986 when Florida's 17th Circuit Court started looking for ways to get their multiple systems behaving as one.

Says Frank Fitzsimmons, Director of Judicial IS, "It takes a lot of information to move a case through the courthouse, and we're the ones who funnel it. The trouble was, the big end of our funnel was too big and too complicated. We had office software on one platform, and data on another. And the files—the clerk's, the probation division's, the jury room's and others—were set up differently."

The plan.

So they mapped out a strategy for improving data access, communications and service for their 65 judges and staffs.

"We needed some standards, and since our data was mostly in an IBM MVS host, we installed IBM electronic mail and were making good progress at integrating applications.

"Then in '89 my IBM rep said, 'Let's go to a seminar.' The subject was OfficeVision, and I sat there amazed. It matched us so well it was like looking in a mirror. Yet it was going to be much easier, more flexible, and SAA™. We installed OfficeVision/MVS in 1990."

The entire judicial system is now using OfficeVision, mostly on IBM PS/2®s, connected by Token-Ring LANs. Along with E-mail, calendaring and other office functions, it works with both DOS and OS/2® software, plus CICS applications in three regions on the host.

The present.

According to Mr. Fitzsimmons, users and the IS people have both come out ahead.

"It's made life easier for all of us. OfficeVision lets us integrate PC and host applications—across all regions of the mainframe—without making users log on and off all the time. Also, we can customize menus almost instantly. Users see only what they need, and training is easier. We have a help desk, but it almost never gets calls about OfficeVision.

"This place was a paper mill, but no more. And our ability to communicate with each other—remember, we manage the case flow of 65 judges—is vastly improved. Since OfficeVision arrived, we've continually increased our application portfolio and usage goes up 20% every year. That's because people are getting information faster and more easily."

The future.

Frank also has some thoughts on investment protection.

"In government, you buy things a little at a time. You can't upset the applecart too much. That's what's great about OfficeVision—it wasn't a shock to our system, it fit right in. We're running it with brand-new OS/2 machines and 10-year-old DOS PCs. And we're integrating applications that were written by independent groups around the county.

"And as an SAA application, OfficeVision gives me comfort for the future. There have been skeptics, I know, but SAA is real. It lets me look down the road and see around the corners, to know what'll be there.

"As I said, this is government. If you make mistakes, you live with them. For us, OfficeVision was no mistake."

To learn more about the 17th Circuit Court's OfficeVision installation, call IBM at **1 800 IBM-6676,** extension 857.

IBM®

© 1991 IBM Corporation. IBM, OS/2 and PS/2 are registered trademarks and OfficeVision and SAA are trademarks of IBM Corporation.

Welcome To The Wide Open Spaces Of Progress.

Welcome to a 4GL/RDBMS world that lets you decide how to build and run an unlimited range of applications without the usual limits. Without the usual constraints.

Take a seat and let us explain.

To begin with, the PROGRESS 4GL lets you build with incredible efficiency while giving you the control of a full-structured programming language.

When the name of the game is development speed, you've got it. When the name of the game is control, you've got it. When the project calls for both, you've got both.

And just to make sure you like the view, you've also got a menu-driven application builder, ANSI-standard SQL and 3GL access if you want it. You've got a true distributed RDBMS with client/server architecture and two-phase commit. You've got multi-threaded, scalable performance on large multi-processor systems.

But stay seated, there's more.

PROGRESS ties together data across different operating systems, networks and databases. It lets you port applications without modification across UNIX, VAX/VMS, OS/2, DOS (even 640k PCs) and CTOS/BTOS with AS/400 coming soon. PROGRESS applications run unchanged over distributed networks using TCP/IP, DECnet, NetBIOS and SPX/IPX. They even update Oracle, Rdb, RMS and PROGRESS databases simultaneously.

#1 In The Last Three Datapro User Surveys
4GL
RDBMS

What it all adds up to is 40,000 installations in 30 countries covering every conceivable application. Plus the #1 rating for efficiency, reliability, and overall user satisfaction in Datapro's last three surveys.

So find a phone and call **800 FAST 4GL** to find out about the PROGRESS Test Drive and the full Datapro report on PROGRESS.

Once you step into our world, you'll never want to leave.

Progress Software Corporation
5 Oak Park, Bedford, MA 01730
Telephone 617 275-4500
Fax 617 275-4595

PROGRESS is a registered trademark of Progress Software Corporation.

Datapro, UNIX, VAX/VMS, OS/2, DOS, CTOS/BTOS, AS/400, TCP/IP, DECnet, NetBIOS, SPX/IPX, Oracle, Rdb, and RMS are registered trademarks of their respective manufacturers.

PROGRESS®

The Usual Limits Don't Apply.™

IRS tries expert system for fewer errors

Agency now boasts a 3% to 9% error rate in answering taxpayers' inquiry letters

ON SITE

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Internal Revenue Service generates 15 million letters annually in response to taxpayers' inquiries and claims. Not a bad feat except for one thing: According to the U.S. General Accounting Office (GAO), 30% of the letters — or 4.5 million — contain errors.

The IRS disputed the estimate but agreed the error rate is too high. However, it recently installed an expert system it said is reducing the rate to between 3% and 9%.

The Correspondex Expert System (CES) is one of 16 systems developed by or now under development in the IRS' Artificial Intelligence Laboratory. The systems use a variety of artificial intelligence tools and techniques and span all major IRS functions, including returns processing, collections, taxpayer assistance and auditing. The 5-year-old lab has fully implemented only a few applications so far, but its $5 million annual budget and the increasing pipeline of projects reflect the agency's growing confidence in AI.

"In most instances, AI has worked out better than we expected," said Ted Rogers, founding chief of the Artificial Intelligence Laboratory. That is because hardware and software for AI have evolved more quickly than expected, he added.

Until recently, tax technicians prepared letters by selecting paragraphs from a file of 300 form letters, adding custom paragraphs as appropriate. CES employs the same base of letters, but it applies expert rules that warn of nonstandard word use, block the use of contradictory or redundant paragraphs, flag missing enclosures and check spelling. CES also insists on beginning each letter with a polite opening paragraph.

CES is written in C language and runs on IBM's family of Personal Computers. Other IRS AI systems are built around expert system shells or are coded from scratch in C++ or LISP. Earlier systems were developed for Symbolics, Inc. processors, but now most are built for IBM PCs, Apple Computer, Inc. Macintoshes or Sun Microsystems, Inc. workstations.

Finding faulty returns

The Automated Issue Identification System (AIIS) helps examiners determine what issues are to be investigated on returns marked for audit by a computer. Returns are flagged based on secret mathematical formulas; tax auditors then decide which returns really need to be audited and why. That manual review, based on auditors' experience and knowledge of local taxpayer characteristics, required the equivalent of 183 full-time people last year.

In a recent test, AIIS was able to identify 90% of the audit issues found by IRS experts, according to Rogers. He said AIIS could reduce preaudit labor by 80% or could add $60 million annually in tax collections. The system, written in LISP for Symbolics processors at a cost of $5 million, is now being tested at an IRS center, Rogers said.

The AI system most visible to the public so far has been the Taxpayer Service Assistant, which helped IRS personnel answer questions this tax season at two IRS call sites. The IRS was criticized by the GAO for giving incorrect answers to telephone inquiries more than one-third of the time, although the error rate improved considerably this tax season [CW, Sept. 11, 1989]. The system will ultimately contain detailed knowledge of 150 tax topics.

> THE SYSTEMS use a variety of artificial intelligence tools and techniques and span all major IRS functions.

Although the IRS said it has high hopes for the Taxpayer Service Assistant, others were not so sure. "The expert system itself didn't significantly increase the accuracy of responses," said Howard Rhile, director of general government information systems at the GAO. Rhile said the improvements seen this year may have been more the result of management improvements made by the IRS.

Rhile said the system needs more testing but acknowledged that AI techniques at the IRS are "absolutely worth pursuing."

In 1984, most AI applications required very expensive Symbolics hardware. Now, expert systems shells and other specialized tools have decreased hardware dependency while speeding the development of application software, he said. AI will find a growing number of applications at the IRS as the agency looks for ways to analyze torrents of data that cannot be handled by more conventional data processing techniques, Rhile added.

AI à la IRS

Examples of artificial intelligence used by the Internal Revenue Service

- **Classification (7 systems)**
  Reasonable Cause Determination System will help examiners apply vague provisions of tax law that allow the IRS to forgive late filing and late payment penalties. A prototype is being field tested.
- **Assistance (5 systems)**
  One system will allow replacement of estate tax attorneys with paraprofessionals for examining and classifying estate tax returns.
- **Intelligence gathering**
  Link Analysis finds relationships among records, such as currency transactions, that may suggest criminal activity. It has been operational since 1988.
- **Planning (2 systems)**
  Automated Workload Management is being tested to offer on-line production control for mainframe computer and print jobs at IRS centers.
- **Text generation**
  Correspondex Expert System helps construct letters to taxpayers. It now has 3,000 users at 10 IRS centers.
- **Software engineering**
  A system uses an expert knowledge base to generate Cobol code that in turn generates test data. The knowledge base can be updated by tax experts with no computer training.
- **Learning**
  The IRS is experimenting with decision trees, neural networks, Bayesian classification and other techniques. Learning algorithms could help them identify criteria for auditing international taxpayers and criteria for prosecuting criminal investigation cases.

CW Chart: Doreen St. John

Decline seen for half-inch tape drives

BY CHRISTOPHER LINDQUIST
CW STAFF

Overall demand for half-inch tape drives is on the decline. Certain market sectors, however, will see growth well into the 1990s, despite increased competition from other storage formats.

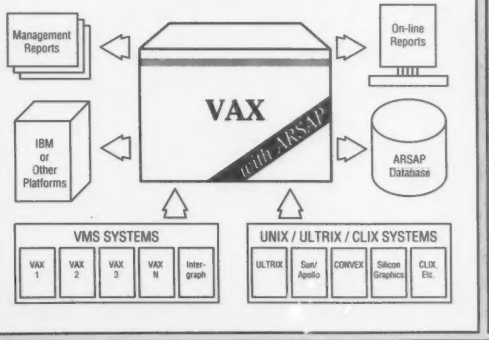
A report issued by Freeman Associates, Inc. in Santa Barbara, Calif., predicted that sales of half-inch reel drives will fall rapidly during the first half of the decade, partly because of buyers switching to half-inch cartridges such as those used in the IBM 3490 drive. However, this will be offset somewhat by overall increases in cartridge drive sales, driven by a recent trend toward standardization on the cartridge format for mainframe data interchange as well as technology advances such as automated tape cartridge libraries.

Phase-encoded drives

The report stated that sales of phase-encoded half-inch reel drives would drop from 34,100 units in 1990 to 2,400 units in 1995, a 41% annual decrease. Conversely, shipments of half-inch cartridge systems will increase from 107,500 drives to 162,000 drives during the same period, an annual increase of 7%.

All half-inch formats will be facing stiff competition from a variety of technologies. Optical discs, digital audiotape, quarter-inch tape cartridges and 8mm cartridges are all being positioned as storage alternatives for the high-end systems dominated by the half-inch format.

However, the report added that these new technologies would not find widespread acceptance among users until they are perceived as offering significant cost or performance advantages over half-inch products. It also noted that rising use of half-inch cartridges for data interchange on mid- and low-range systems and the popularity of Digital Equipment Corp.'s cartridge products indicate that half-inch drives will see continued use for some time.



ARSAP: Professional System Accounting Software for VAX/VMS and UNIX Systems

ARSAP collects accounting data from VAX/VMS and UNIX systems to produce consolidated reports on key functions such as:

- ❑ Chargeback/Cost Allocation
- ❑ Project Accounting
- ❑ Resource Management
- ❑ Disk Space Management
- ❑ DCAA Audit Requirements
- ❑ Selective Image Accounting
- ❑ Performance Management
- ❑ Network/Port Cost Recovery

More than 1200 sites around the world are currently running ARSAP – often in a hands off, lights out mode. ARSAP can track computer resources by user, project, department, or any other functional group. Resulting data can be used for data center management reports and internal billing of system resources. ARSAP can also feed data into IBM corporate systems.

For further information, call: 1-800-432-7727 or (301) 725-2500

GEJAC, Inc.
8643 Cherry Lane
Laurel, MD 20707

Hamilton

FROM PAGE 29

customers do their jobs.

Howard Fosdick, president of Fosdick Consulting and president-elect of IDUG, said this year's meeting shows just how much DB2 is growing up. There's a whole core of DB2 veterans, or "advanced" users, who have been running DB2 for more than five years now. Some come to meetings to share their techniques for managing large DB2 environments. These are the folks who talk about their need to keep DB2 on-line seven days per week.

Then there's a large collection of users who have a few years under their belts and have moved beyond the initial testing phase.

Both of these groups have come to learn from the veterans and "pick up performance tips," as another attendee noted. When the advanced users held a panel discussion late one afternoon (when sessions typically have low attendance), they had more than 1,000 attendees.

This description of the IDUG meeting is not intended to be a plug for DB2. The meeting was hardly a pep rally for IBM. However, it is clear that IDUG is not a bunch of crabby users, either. While many attendees interviewed had no trouble coming up with a suggestion for how IBM could improve DB2, they also seemed to be generally satisfied with the efforts the company has made so far.

Hamilton is a *Computerworld* senior editor, systems and software.

IBM leads slowing CAD/CAM market

BY MARYFRAN JOHNSON
CW STAFF

CAMBRIDGE, Mass. — While growth is slowing markedly in the computer-aided design and manufacturing software market, CAD/CAM is still chugging along at a projected growth rate of 12% this year with revenue of $7.7 billion, according to Daratech, Inc.

IBM remains the undisputed market leader, followed by Intergraph Corp. and Prime Computer, Inc.'s Computervision Division, the market research company reported recently.

Showing the most impressive growth — 25% projected for 1991 — is Sausalito, Calif.-based Autodesk, Inc., which produces the world's most widely used CAD system, Daratech said.

"The good news for CAD/CAM is that growth is very healthy in Europe, but the bad news is that currency fluctuations can either enhance that or mask it," said Charles Foundyller, president of Daratech. Advances in solids modeling have sharpened the accuracy, data integrity and storage abilities of CAD/CAM and computer-aided engineering (CAE) packages, Foundyller noted.

"Those advances have whetted the appetites of users for more accuracy, integrity and information, however," he added.

IBM's share of software

IBM is now providing more than $2.3 billion worth of CAD/CAM/CAE software, Daratech reported. Boosting IBM's prospects are its new Cadam and Catia releases for the RISC System/6000 workstations and servers, which are expected to open lower end markets to IBM.

"Traditionally, IBM has been favored by very large corporations that buy multihundred-seat configurations," Foundyller said. Workstations still lag in their ability to match the security and even price-per-seat cost of mainframe-based CAD/CAM, he added.

IBM does 75% of its CAD/CAM business outside the U.S. — half in Japan, where time to market is a more important consideration than return on investment, the research firm noted.

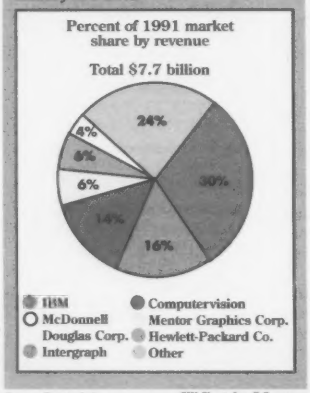
For the No. 2 competitor — Huntsville, Ala.-based Intergraph — Daratech is projecting revenue of $1.25 billion with 10% growth in 1991. The vendor is in a major platform transition, porting its electronic design automation software and mechanical applications to Sun Microsystems, Inc. workstations.

The move beyond its own proprietary hardware should help allay customer worries. A recent Daratech survey of Intergraph users found them generally satisfied but voicing some concern about the company's resistance to non-Intergraph platforms.

For Computervision, this year promises a strong rebound. Computervision's CAD/CAM business grew by 17% in 1990 to $953 million and is expected to top $1 billion this year. Prime's holding company, DR Holdings, Inc., reported that 68% of Prime's 1990 product revenue came from its CAD/CAM-related sales.

Prosperous outlook

Although revenue from the computer-aided design, manufacturing and engineering industry is projected to increase by only 12% this year compared with nearly 15% last year, it is still higher than the 9% projected growth rate for the computer industry as a whole



Source: Daratech, Inc. CW Chart: Janell Genovese

A TOAST TO THE SWEDISH S

IDEAssociates, Inc. 29 Dunham Road, Billerica, MA 01821 (508) 663-6878. FAX (508) 663-8851. Europeaq Headquarters (France) 33-14-035-5858. Asia/Pacific (Hong Kong) 852-5-420172. United Kingdom, 44-1-396-5945. IDEA are registered trademarks of IDEAssociates, Inc. Servcom is a registered trademark of IDEA Courier, Inc.

Fla. county moves to VAX 9000

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

FT. MYERS, Fla. — A series of lightning strikes sparked more than computer crashes last summer in the unofficial "lightning capital" of the Sunshine State.

The summer thunderstorms also washed away Wang Laboratories, Inc. as Lee County's office automation provider, clearing a path for Digital Equipment Corp. and its mainframe VAX 9000.

"Things were getting just intolerable," said Dennis Morris, acting director of MIS for Lee County. "We expect a lot of lightning strikes, but we found when the Wang machines went down it took three to four days to get the part here, and then it was usually dead on arrival."

Wang officials acknowledged some previous service problems in Lee County but stressed how their regional office had responded by placing an on-site support worker in Ft. Myers and establishing a special Wang "parts depot" in the county's information systems department.

Nevertheless, the Lee County Board of County Commissioners forged ahead with a sweeping reform of its information services.

DEC installed

The county chose the mainframe-anchored DEC network — including two VAX 6000 minicomputers and at least 16 DEC workstations — to handle office automation, a geographic information system (GIS) and a newly automated criminal justice system.

A key consideration in the systems overhaul was the previous decade of runaway growth in the southwest Gulf Coast region, where the area including Ft. Myers, Cape Coral and Sanibel Island has grown 63% in the past 10 years to a population of 350,000.

"The county commissioners recognized our need for new and better technology," said Morris, who is pitching an IS budget of $4.9 million next year after a heavier 1990-91 capital spending budget of $6.7 million.

The 57-member IS department is currently juggling three major projects.

One project is the conversion of some 400 Wang users to the VAX 9000 running All-In-1 office software, electronic mail and Lotus Development Corp.'s 1-2-3 spreadsheet.

The second project is the replacement of an older Intergraph Corp. mapping system with the GDS GIS from McDonnell Douglas Corp.

The third project will create the Criminal Justice Information System for the State Attorney's Office. This on-line tracking and record-keeping system — about 70% completed now — will electronically follow each individual through the entire court process, with witness and jury management capabilities included.

The office automation project began in earnest two months ago, moving one week at a time through each department. While users are in retraining classes, their old Wang word processing applications are shipped to DEC's Colorado Springs, Colo., facility to be converted and sent back in All-In-1 format, Morris said.

"Our working relationship with DEC could not be much better," he said. DEC is also managing the county's Ethernet network, which connects 20 county buildings in downtown Ft. Myers via fiber-optic cabling or microwave.

The McDonnell Douglas GIS will provide the county with intelligent mapping capabilities, enabling users to effectively track sewer flows, water flows and road traffic loads for long-range planning purposes.

"We will be able to select a parcel, click on it and ask the database what will happen if we put a 100,000-sq-ft shopping center there," Morris said. "Engineering will immediately know if we have a problem with a water or a sewer line, for example."

Once the GIS goes on-line, Decstation 3100s will be placed in several county departments. "I am expecting a tremendous explosion in usage once this GIS gets going," Morris noted.

The one system remaining unchanged in Lee County's massive modernization is an IBM 3081, which handles transaction processing for the county's purchasing, property appraisal, permit assignment and code enforcement.

Re-DEC-orating

New DEC hardware helps Lee County manage its progress

- **Lee County, Fla.**, one of the fastest growing regions in the U.S., has installed more than $3 million in DEC equipment to manage its explosive growth.
- A mainframe VAX 9000 will run office automation under All-In-1, while a VAX 6000 Model 410 runs a geographic information system (GIS) from McDonnell Douglas Corp. in the first customer installation to run McDonnell Douglas' GIS database in conjunction with DEC's RDB relational DBMS.
- The State Attorney's Office is converting from an old Burroughs Corp. system to a VAX 6000 running customized software for the Criminal Justice Information System, an on-line tracking and record-keeping system that will eventually include Lee and four surrounding counties.

CW Chart: Eric Cormier

AFETY STANDARD.

Here's to the world's strictest standard concerning terminal ergonomics and very low frequency emissions—the Swedish Recommendation. And here's to the first line of coax and twinax displays in North America to comply with this standard—IDEA's.

We've designed all our terminals to reduce concerns about VDT emissions in the workplace by minimizing extremely low frequency (ELF) electromagnetic radiation. From the standpoint of ergonomics and operator comfort, our displays and keyboards are adjustable and our well-defined characters produce sharper resolution that's easy on the eye.

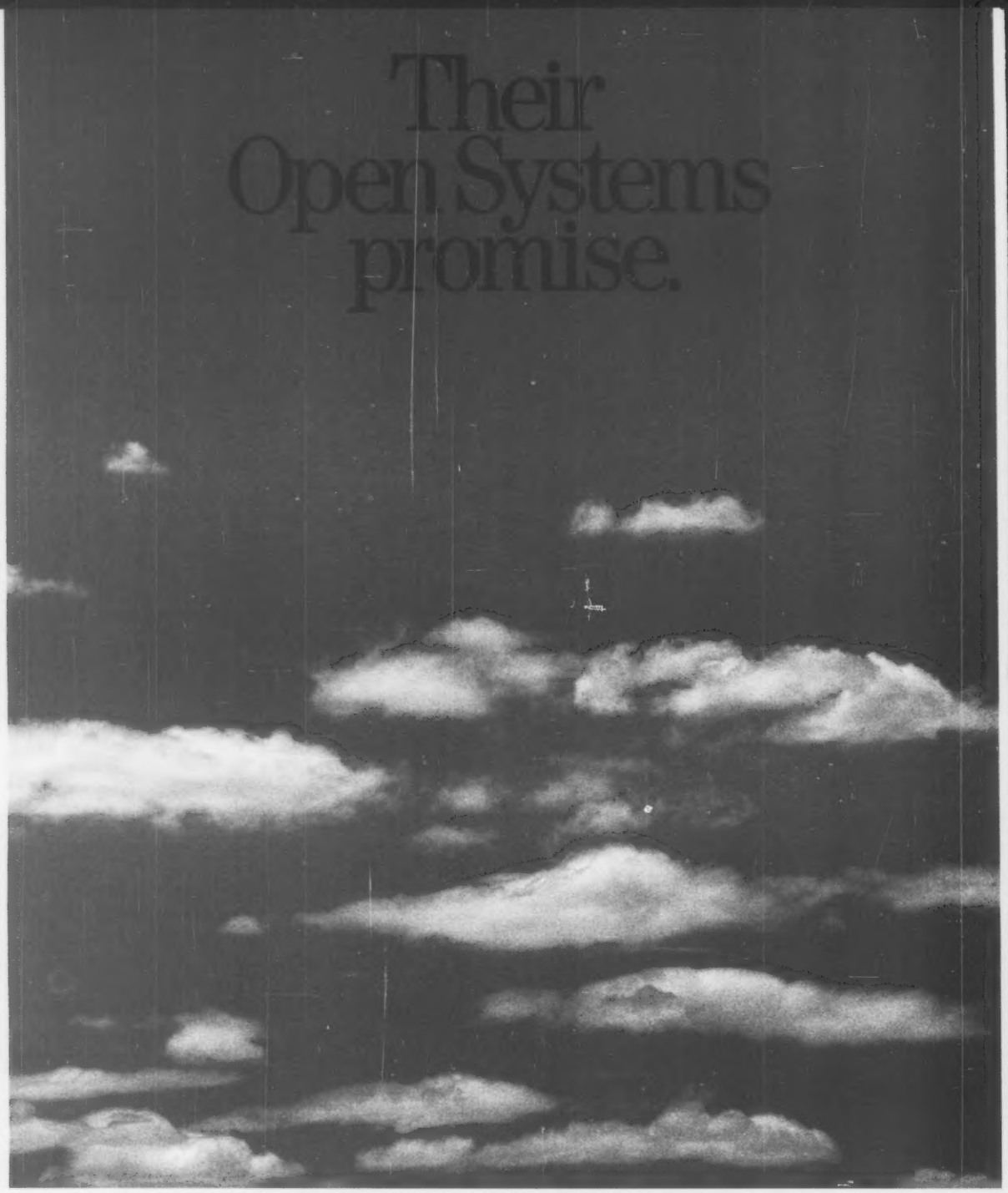
Just as important, we've managed to satisfy the Swedish standard without compromising one bit on our own. IDEA terminals are modular, InfoWindow compatible, field-upgradeable and available in amber, green, black & white or color. On-site service is offered by IDEA Servcom.

The coax and twinax terminals from IDEA. They're worthy of a toast in any language. To find out more, call IDEA at 1-800-257-5027. Outside the U.S., call 1-508-663-6878.

IDEA

The intelligence to communicate better.

Canada, 416-676-9930. InfoWindow is a registered trademark of International Business Machines Corporation. IDEAssociates and



Which looks better to you? More blue skies. Or fast delivery of real Open Systems.

If it's hardware and software you want, there's a computer company ready to supply them.

Hewlett-Packard.

In fact, we'll make it this specific. If you're planning to add a system to handle a new strategic application, call us.

We'll deliver a computer solution that will tackle the immediate task. At the same time, it will integrate with products from other vendors, with other platforms, operating systems and applications.

Key to making this work is our broad range of systems software technology. For the people in your company, this brings point-and-click simplicity, while allowing transparent integration of applications and access to data bases, both local and remote.

This Open Systems reality has a solid foundation. Six years

©1991 Hewlett-Packard Company NSS9017

Ours.

of delivering standards-based systems. A dedication to networking standards, from LANs to WANs. And a family of RISC-based computers offering unmatched scalability from desktop models to multi-user systems.

For nearly twenty years, we've been delivering computers to handle company-wide strategic functions. From materials management and financial analysis to office automation and distribution. And we offer service so superior that, in the Datapro User Surveys, HP has achieved the best overall record among industry leaders for customer support satisfaction. For seven straight years!

For more information, call **1-800-637-7740, Ext. 1947.** You'll see there's nothing "blue sky" about our Open Systems.

HEWLETT
PACKARD

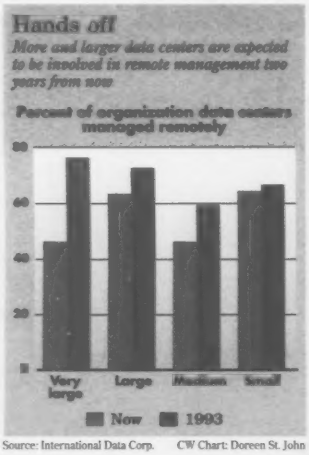
Data centers going remote?

BY SALLY CUSACK
CW STAFF

Remote data center management is not a concept that has been embraced by the majority of large-scale IBM users. However, recent data reveals there will be a gradual automation of remote centers as the decade wears on and corporations continue to struggle with economic and technical issues.

A combination of factors, including cost-reduction concerns and a growing expertise crunch, will be responsible for an increasing interest in remote data center management in the 1990s.

Based on a recent study, information systems directors at Fortune 1,000 companies are asking for more automation and expert systems to reduce personnel numbers across the organization and achieve better resource management.



Source: International Data Corp. CW Chart: Doreen St. John

"People are saying that remote data centers are critical now, but they realize they are going to be even more critical in the future," says Anthony C. Picardi, director of applications development tools at International Data Corp., a Framingham, Mass.-based research and consulting firm.

This will result in a very definite move to remote data management taking place among IBM shops implementing the Systemview repository architecture, Picardi said.

The study surveyed 300 sites and categorized the respondents into very large, large, medium and small installations. Very large sites were classified with an average number of 4.7 mainframes, while small sites registered with an average of 1.1 mainframes per site.

The research revealed that the number of remotely managed data centers at the larger sites is expected to increase substantially by 1993.

Currently, the average percent of remotely managed sites is 46% for very large sites, 62% for large sites, 46% for medium sites and 64% for small sites. In 1993, these percentages are expected to increase to 76%, 71%, 59% and 66%, respectively.

While moving toward remote data center management is an important direction, users reported other issues commanding their more immediate attention.

More than 60% of the sites surveyed said the most critical issue at hand was achieving continuous availability with no downtime. Easy system expandability ranked second, and the availability of interoperable, multivendor software came in third.

However, the users surveyed said they anticipate several issues that will rapidly gain in importance.

First among these is considering the centralized management of multiple data centers, followed by reduction of total personnel (at the medium-size site level), reduction in expertise requirements and the ability to control more resources from a central location.

SOFTWARE SHORTS

DG adds insurance applications

Data General Corp. has announced that seven additional insurance software packages are now available on its reduced instruction set computing-based system. These include products from **NRM Computer Systems, Inc., Harte Systems, Inc.** and **Resource Information Management Systems.**

Twenty-four companies have responded to **Petrotechnical Open Software Corp.**'s (POSC) first Request for Technology on Exploration and Production Data Models. Respondents include oil companies, service companies, software vendors and computer manufacturers. Founded by five major oil companies in December 1990, POSC is a not-for-profit organization designed to promote a worldwide standard for facilitating technical computing for the upstream oil business. The submitted models will be presented to POSC in July and reviewed by POSC technical staff.

Apprehensive?

PLATINUM *technology, inc.*
555 WatersEdge Drive, Lombard, IL 60148
(708) 620-5000 FAX (708) 953-1923
1-800-442-6861 (US) 1-800-848-0140 (Canada)

Corporate Sales Offices: Houston, Los Angeles, New York, Sacramento, Waterbury, CT

Domestic Affiliates: Chicago, Cleveland, Dallas, Delaware Valley, Michigan, Mid-Atlantic, Northwest, Wisconsin

International Affiliates: Argentina, Australia, Austria, Benelux, Brazil, Chile, Denmark, France, Germany, Israel, Italy, Malaysia, Norway, Peru, Poland, Scandinavia, Singapore, Spain, Sweden, Switzerland (Geneva and Zurich), United Kingdom, Uruguay, Yugoslavia

© PLATINUM *technology, inc.*, 1991. All rights reserved. IBM is a registered trademark and DB2 is a trademark of International Business Machines Corporation.

Unisys hopes to convert IBM System/36 users

Alternative to AS/400 has the ability to run System/36 application programs

BY ELLIS BOOKER
CW STAFF

The 90,000 to 95,000 sites making up the IBM System/36 U.S. customer base have proved a difficult market to crack.

Just ask IBM.

Despite their vendor's best efforts, many System/36 users have been reluctant to migrate to IBM's current midrange computer, the Application System/400, which the company introduced in June 1988.

Last September, Unisys Corp. offered this captive audience an alternative: the chance to run its existing System/36 applications in a more up-to-date hardware and software environment — an environment that, unlike the AS/400, would not require running System/36 software in an "emulation" mode.

Called RAMP, for RPG Application Migration Product, the Unisys offering bundles a Unisys Series A mainframe with twin-axial line connectors, an RPG II compiler and an application interface that mimics the System/36's operational control language.

The advantages, according to Unisys, are that users can continue to implement the 13,000 or so application programs for the System/36 while exploiting other programming languages (such as Cobol, C, Pascal and Fortran) and fourth-generation languages including Unisys' Link and Mapper products.

Advance Paperbox Co., a longtime user of the IBM System/34 and System/36 architecture, "was facing the loss of all our software," said Ruben Miranda, MIS director at the Los Angeles firm. Miranda, who believes he was the first customer of RAMP, said he was unhappy about a move to the AS/400 and the prospect of running his System/36 applications under an emulator. Likewise, Miranda said, he did not relish the thought of having to rewrite his software under RPG III for the AS/400.

While Miranda said the port to the A series was no more cumbersome than the operating system upgrades for the System/36, he cautioned, "It's not all plug and run. There are certain adjustments."

Nevertheless, Miranda said he is happy with his Unisys platform, installed in February, which now handles all of the corporate and manufacturing floor applications that were once run on the System/36.

In January, RAMP product group general manager Herman E. Brown told *Computerworld* he wanted to sell 1,000 RAMP-equipped Series As by the end of the year.

"Ultimately," said Brown, who runs the RAMP group in Mission Viejo, Calif., "we want 10% of the [System/36] base."

Still, several analysts who are watching the general difficulties at Unisys are dubious that RAMP will have much of an impact.

"I don't know why anyone would switch IBM to Unisys — unless they really hated IBM," said Bob Vautrain, a senior research analyst at Gartner Group/Infocorp in Acton, Mass.

Vautrain went on to note that past efforts to capitalize on IBM's System/34 and System/36 market had been unsuccessful. "I'd be surprised if [Unisys] made back their development costs," he said.

Are you leading your MIS team toward a production environment based on IBM®'s DB2™ database management system? Do you get cold feet at the thought of entrusting your company's business-critical information systems to DB2 applications?

PLATINUM *technology* can boost your confidence in DB2—and your productivity. We've tested the waters of DB2, and we're poised to help you realize its benefits quickly, without apprehension.

PLATINUM's complete line of integrated software products, education, publications, and related services for DB2 can give you all the support you need to speed your success with DB2. Our clients report doubled and tripled productivity gains from their DBAs—and additional benefits for application developers and end users as well.

Don't hesitate. Call **1-800-442-6861** today for more information, product demonstrations, or free on-site trial evaluations of any PLATINUM products.

PLATINUM technology

CASE

CONTINUED FROM PAGE 29

objects within Repository Manager. "The environments themselves should use generally the same kind of CASE tools. We think it's doable in a reasonable period of time. And we're working the tools as well with the ability of the environments to communicate with each other."

In the meantime, IBM and HP will port Softbench over to the RS/6000, although Kneemeyer would not specify a time frame beyond "as soon as possible." IBM will also work with third-party Softbench vendors to get their products running on the IBM platform.

Softbench's 26 vendors

Some 26 vendors are affiliated with Softbench, but not all of their products run on the RS/6000 yet. Among the Softbench products that do are Software Through Pictures from San Francisco-based Interactive Development Environments, Inc. and Teamwork from Providence, R.I.-based Cadre Technologies, Inc.

Kneemeyer said the Softbench strategy "complements" IBM's existing CASE tools on the RS/6000. In February 1989, IBM announced a suite of technical development software, tied together with Atherton Technology's Integrated Project Support Environment.

IBM will continue to sell the Atherton-integrated software as high-end technical CASE products, Kneemeyer said. "We view Atherton as a fairly sophisticated framework, with a Repository Manager for objects. Softbench addresses the lower end." Approximately 90% of IBM's Unix CASE customers are "in the beginning of the CASE curve."

NEW PRODUCTS — HARDWARE

Power supplies

Clary's Onguard Series 40 *family filters utility power*

Clary Corp. has introduced the Onguard Series 40 family of uninterruptible power supply systems for IBM Application System/400 midrange computers.

The six models in the line filter utility power and provide perfect sine waveform power, according to Clary. The low-end Series 4010, priced at $950, offers four to 12 minutes of backup power for IBM Personal Computers working in conjunction with midrange systems. The high-end Series 4060, which weighs 599 pounds and is priced at $10,750, provides eight to 26 minutes of power for the AS/400 Model 9406-B50 and above.

Clary
320 W. Clary Ave.
San Gabriel, Calif. 91776
(818) 287-6111

I/O devices

Corollary, Inc. has begun shipping the Corollary 8X4GT, a Unix-based multiport I/O subsystem.

The adapter board includes a 25-MHz Intel Corp. 80286 processor and connects to as many as four eight-port terminal concentrators. Up to four 8X4GT boards can be installed in an Intel 80386 or I486 host system for a maximum capacity of 128 connectable users.

Terminals may be connected up to 1,000 feet away from the host with no degradation of performance.

The product costs $895.

Corollary
17881 Cartwright Road
Irvine, Calif. 92714
(714) 250-4040

Processors

Lynk Corp. has designed a family of intelligent workstations for IBM midrange terminal emulation.

The Intellynk workstations are full-featured IBM Application System/400 terminals that also include an Intel Corp. processor, ranging from a 16-MHz 80286 to a 20-MHz 80386SX, and a 60M-byte hard drive. The systems support four host sessions, 132-column data and 122-key keyboards. On the high-end model, personal computer, AS/400 and ASCII data can be displayed under Microsoft Corp.'s Windows 3.0 and Wall Data, Inc.'s Rumba software.

Pricing starts at $2,100.

Lynk
101 Queens Drive
King of Prussia, Pa. 19406
(215) 265-3550

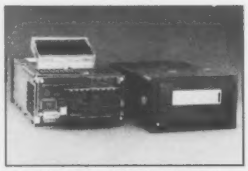
Arix Corp. has added the entry-level System90/15 to its line of Unix-based superminicomputer products.

The system includes two Motorola, Inc. 68040 processors and 64M bytes of memory. The AT&T Unix System V Version 3-based operating system is compatible with Posix, and up to 64 users can be supported.

Pricing for the System90/15 starts at $39,900.

Arix
871 Fox Lane
San Jose, Calif. 95131
(408) 432-1200

Data storage



Digi-Data's Model 4000 *attaches to Exabyte 8mm drives*

Digi-Data Corp. has announced the Model 4000 Tailgate Plus Data Compressor for Exabyte Corp. 8mm tape drives.

The product attaches to the rear apron of Exabyte 8200 and 8500 drives. An LCD display for monitoring drive status and a compression on/off toggle that mounts in the front of the tape drive are included. This model increases tape storage capacity by up to 400%, according to Digi-Data.

The product is priced at $1,200.

Digi-Data
8580 Dorsey Run Road
Jessup, Md. 20794
(301) 498-0200

MDB Systems, Inc. has introduced Diskarray, a small computer system interface (SCSI) subsystem with up to 6G-byte storage capacity.

Diskarray uses redundant arrays of inexpensive disk technology. It consists of four 20-MHz enhanced small device interface drives and a redundant parity drive. Each drive channel includes 128K bytes of look-ahead cache memory to increase access speed.

The system is priced at $43,500 for 3.1G-byte capacity and $61,200 for 6G-byte capacity.

MDB Systems
1110 W. Taft Ave.
Orange, Calif. 92613
(714) 998-6900

NEW PRODUCTS — SOFTWARE

Development tools

Distributed Image Systems Corp. (Discorp) has created Imagetools API for integrating document image processing into existing custom applications.

Imagetools API is a suite of software routines that enable users to build in image processing functions such as multiple page scan, view and print — as well as file insert and replace functions. The product also provides an interface to Discorp's Imagetools utilities, which optimize system scanning, storing, printing and document management capabilities.

Imagetools API costs $995. It is available for Unix, VMS and other environments.

Discorp
290 Easy St. #5
Simi Valley, Calif. 93065
(805) 584-0688

Interactive Software Engineering, Inc. has ported its Eiffel development software to the Digital Equipment Corp. VAX/VMS operating system.

The package includes an advanced object-oriented programming language. It also provides libraries of reusable code program elements such as multiple windowing, X Window System-based graphics, parsing and lexical analysis.

Eiffel for VMS costs $11,995.

Interactive Software Engineering
Suite 7
270 Storke Road
Goleta, Calif. 93117
(805) 685-1006

Applications packages

Trax Softworks, Inc. has introduced a version of its Edword mainframe word processing application for IBM's Professional Office System.

Edword was designed to emulate microcomputer-based word processors in ease of use, the firm said. The program includes spell checking, pull-down menus, page preview and support for printers incorporating Adobe Systems, Inc. Postscript.

Depending on processor size, a perpetual license ranges in price from $11,200 to $33,350.

Trax Softworks
5840 Uplander Way
Culver City, Calif. 90230
(213) 649-5800

Realworld Corp. has released Version 6.0 of its Realworld Accounting and Business System for Unix and The Santa Cruz Operation's Xenix platforms.

The system consists of 17 software modules covering financial and general business functions such as general ledger and inventory control. The following features are added to Version 6.0: new methods for calculating commissions, proximal billing, automatic check voiding, direct payroll deposits and custom shipping label output.

Pricing per module begins at $695.

Realworld
282 Louden Road
Concord, N.H. 03302
(603) 224-2200

Utilities

Main Frame Software Products Corp. has introduced HDM, a help desk management software product for CICS environments.

HDM allows end users to communicate with a help desk facility on-line, maintaining the office work flow, the company reported. The host-based program automatically records system errors and includes a database to help personnel diagnose and correct problems.

License fees range from $10,900 to $14,000.

Main Frame Software
135 Glen Road
Wellesley, Mass. 02181
(617) 239-0288

Advanced Archival Products, Inc. has developed the Erasable Optical File System (EOFS), a software product for optical disc jukeboxes.

EOFS configures erasable optical media in a jukebox to appear as a standard magnetic disc system to the user. Information is stored on the optical discs in standard Unix file-system format. All magnetic disc utilities and commands work with the EOFS system, according to the firm.

Pricing starts at $4,000 and is dependent on system storage capacity.

Advanced Archival Products
Suite 114, Building D
14 Inverness Drive East
Englewood, Colo. 80112
(303) 792-9727

MacKinney Systems has released ISPF/VSAM Utility (IVU) Version 1.8, a program offering on-line access to common VSAM functions.

The product reduces the need for batch processing by storing parameters for data-set creation. In addition, IVU Version 1.8 provides editing, copying, browsing and other functions on VSAM and non-VSAM data sets. IVU Version 1.8 is executed via a panel-driven dialog under ISPF and may be run on both sides of a swapped session.

The utility program is priced at $1,295.

MacKinney Systems
Suite 103
2740 S. Glenstone
Springfield, Mo. 65804
(417) 882-8012

Compilers

Oasys, Inc. has announced immediate availability of the Green Hills C++ Compiler for Data General Corp.'s Aviion platform, including the AV7000 and AV8000 multiprocessor systems.

The Native Compiler offers object-oriented techniques, including multiple inheritance, data class abstraction and operator overloading. The Cross Compiler develops embedded applications for Motorola, Inc.'s 68000 series and 88000 processor-based systems and Intel Corp. I860 systems. The Green Hills Compiler is compatible with AT&T C++ Versions 2.1 and earlier, according to Oasys.

Pricing for the Green Hills C++ Compiler starts at $2,000.

Oasys
One Cranberry Hill
Lexington, Mass. 02173
(617) 862-2002

Systems Center, Inc. has announced Prorexx, a low-cost Rexx compiler for the IBM VM operating environment.

Prorexx supports all instructions for Rexx Release 4.0 and is Systems Application Architecture-compliant, according to Systems Center. The compiler provides code listings and cross-references and includes a runtime library.

Pricing for Systems Center's Prorexx ranges from $3,800 to $38,000, depending on the processor group.

Systems Center
1800 Alexander Bell Drive
Reston, Va. 22091
(703) 264-8000

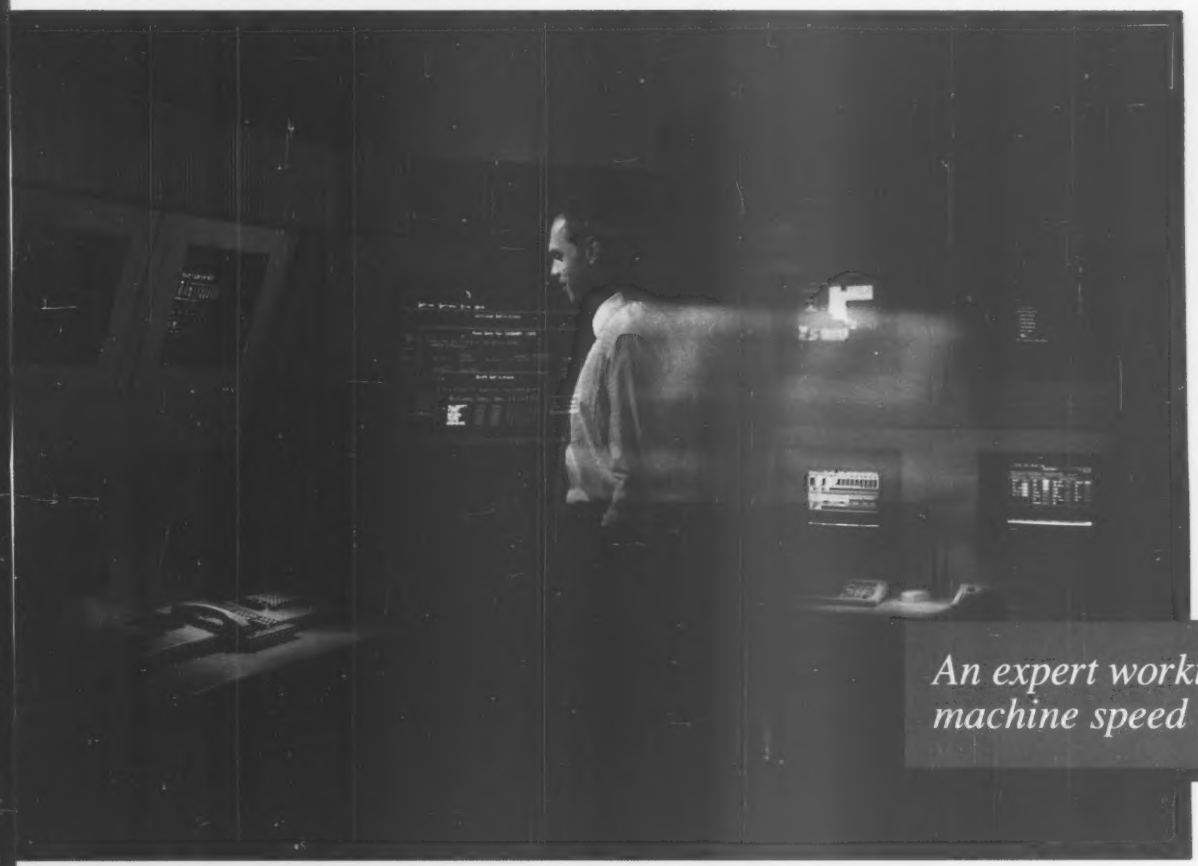
Database management systems

Prime Computer, Inc. has introduced a new interface based on SQL commands for its superminicomputer database management environments. The software product, Prime Information SQL, allows users to modify and query the Prime Information and Information Plus database management systems through standard SQL commands. The interface supports all basic SQL data manipulations and adds the ability to treat individual values in a multivalue field separately. A statement editor is included.

Pricing for the software product starts at $125 on the Prime EXL platform and at $1,500 on the company's 50 series systems.

Prime Computer
Prime Park
Natick, Mass. 01760
(508) 655-8000

Candle's AF/PERFORMER™ turns automation promises into today's reality.



An expert working at machine speed

"In the first 90 days of using AF/PERFORMER, my critical systems were saved from four separate outages." – AF/PERFORMER Customer

AF/PERFORMER is a powerful extension of the technology first pioneered by Candle's OMEGAMON®. Since 1977, we've been helping customers isolate and fix system problems before critical applications and systems are impacted. Now AF/PERFORMER takes that technology an important step forward by responding to the most common data center problems at machine speed – automatically.

AF/PERFORMER is like having your best systems programmer available around the clock to solve complex problems in realtime. Its expert solutions safeguard availability, response time and throughput by automatically finding – then fixing – major problems in MVS, CICS, and DB2 that could cause your next outage or slowdown.

With AF/PERFORMER on board, your in-house experts can focus on advanced tuning issues, not emergencies – a much better use of their valuable time.

Candle's AF/OPERATOR®, AF/REMOTE™, and AF/PERFORMER provide integrated, automated solutions in three key areas: automated console management, remote control, and performance management. That's why customers around the world have selected Candle as their partner in automation.

Candle delivers the vision of what 90's automation is all about. To learn more about how we can prevent outages in *your* data center, just call **(800) 843-3970** today and ask for Department 315.

Candle®

Copyright © 1991 Candle Corporation. All Rights Reserved.

The 486™ SX Business Workstation.

Now you can plug into Intel486™ power without getting a bad case of sticker shock. Because now you can get a 486 SX Business Workstation. And that means more of you can afford the power and flexibility that only Intel486 microprocessor technology can provide.

You still get plenty of muscle to run today's most advanced business applications—fast. Plus, you get hardware and software compatibility to save you the time and money of retraining. But

486, Intel486, and the SX logo are trademarks of the Intel Corporation. ©1991 Intel Corporation. All rights reserved.

Now you can put in a plug for everyone.

best of all, you get it all for well within your budget.

So if you want to put affordable power on your desk, call Intel today at 800-548-4725 for more information and a free 486 Family brochure. Then put in a plug for 486 SX Business Workstations at your office.

intel®
The Computer Inside.™

If you think the LaserPrinter E looks good in person,

wait till you see how it looks on paper.

	The New IBM LaserPrinter E	HP LaserJet IIP
Speed	✓ up to 5 ppm	up to 4 ppm
Speed upgrade option	✓ up to 10 ppm	No
Adobe PostScript option	Yes	Yes
Printer emulation	✓ IBM, HP PCL	HP PCL
Std. plotter emulation	✓ Yes	No
Font card slots	✓ 2	1
Std. input paper tray capacity	✓ 200	50
Std. output paper tray capacity	✓ 100	50
Opt. sec. input paper tray capacity	✓ 500	250
Opt. envelope tray capacity	✓ 75	20

Any way you look at it, the IBM LaserPrinter E gives you a lot of appealing features at a very appealing price.

The affordable IBM LaserPrinter E gives you all the advantages of laser quality output 25% faster than the major competitor, the HP LaserJet IIP. The IBM LaserPrinter E also comes standard with four times the paper capacity and twice the number of font slots.

Plus, the IBM LaserPrinter E is unique in its price range because it lets you customize your printer's speed and features to meet your exact needs at any given moment.

All of which makes the IBM LaserPrinter E the only affordable laser printer that lets you buy now and grow later.

For example, if you decide you want faster printing, only the LaserPrinter E lets you double its speed.

Or if your software requires the Adobe PostScript® language, the LaserPrinter E can also give you that creative flexibility at a reasonable price.

Or if you decide you could use automatic collating of letterhead, second sheets and envelopes, the LaserPrinter E lets you add that, too.

Yet no matter how many features you add, the LaserPrinter E's unique stackable design takes up practically no more deskspace.

So whether your first requirement is affordability, performance or flexibility, the IBM LaserPrinter E should be at the top of your shopping list. See it today by calling 1-800-IBM-2468, ext. 982, for the name of your nearest IBM Authorized Remarketer.

The IBM LaserPrinter E.
Suddenly, nothing else measures up.

IBM®

IBM is a registered trademark of International Business Machines Corporation. HP LaserJet IIP is a product of Hewlett Packard Corporation. Adobe PostScript is a registered trademark of Adobe Systems Inc. ©1991 IBM Corp.

Q&A 4.0 gains tools, flexibility

BY CHRISTOPHER LINDQUIST
CW STAFF

Symantec Corp. has announced the most recent release of its word processing and database software for IBM personal computers and compatibles.

Q&A Version 4.0 reportedly includes new application programming tools, more flexible reporting and enhanced word processing capabilities combined with an easy-to-use interface.

The updated package offers a link to SQL that allows users to query corporate databases on remote mainframes.

The programming tools allow users to create such features as customized menus for specific applications.

Report previewing

With the new release, presentation-quality reports can be prepared and previewed on-screen before printing. Q&A 4.0 also includes a 660,000-word thesaurus in addition to the previously available 100,000-word spell checker.

The update is scheduled for release within a couple of weeks and will reportedly have a retail price of $399. The suggested upgrade price for registered users will be $85. It will run on any IBM Personal Computer XT, AT, Personal System/2 or compatible system running DOS 2.0 or higher with at least 512K bytes of memory.

Users laud Compaq's efforts

Direct support, price cuts, alliances could ensure vendor's future health

BY RICHARD PASTORE
CW STAFF

One year ago, few users could have foreseen that Compaq Computer Corp. would be offering direct support, segmenting its dealers by expertise, allying with minicomputer vendors, restructuring prices dramatically downward and considering selling through superstores.

These policy shifts and about-faces have been welcomed by most users, who say they come none too soon. They may also be Compaq's long-term insurance policy against the debilitating effects of the current industry down cycle.

"All these changes are geared toward better supporting their corporate customers," said Gerard Nussbaum, MIS director at Premier Hospitals Alliance, Inc. in Westchester, Ill. For Nussbaum, who is already a Compaq user, the changes strengthen his resolve to continue buying from the vendor.

Compaq's April across-the-board price cuts, for example, have lessened the heat Nussbaum was feeling from upper management to consider cheaper clones. Suddenly, the company whose price quotes were often out of the ballpark is showing up in bids with one of the lowest quotes of the group, he said.

"I think they've been getting a lot of pressure from major users about prices and clones," added Marc Kustoff, director of microcomputing at Rhone Poulenc Rorer, Inc. in Fort Washington, Pa. He said he expects Compaq to make even more reductions.

Compaq is the first to admit that its changes of heart have been prompted by customer pressure and increased industry competition. The moves have come too late to avoid the dampening impact of recession and

Continued on page 56

Time passages

The year 1991 has brought dramatic about-faces and policy changes as Compaq Computer Corp. has tried to strengthen customer ties

March 4: Inaugurates direct telephone support services.

April 9: Unveils Advanced Computing Environment alliance.

April 16: Cuts list prices an average of 21.5% across product line.

May 1: Begins designating dealers with specialized networking expertise.

May: Evaluates superstore authorization potential

CW Chart: Doreen St. John

FEATURE: PC SOFTWARE

Vendors, users face off in site license debate

BY SCOTT KRAMER
SPECIAL TO CW

In the world of personal computer software, self-interest is colliding with self-interest.

The issue is simple: Vendors prefer to sell one package for one person. Users, meanwhile — especially those with local-area networks — are increasingly seeking "site licenses" that would allow more widespread use of software, particularly for widely used packages at large firms. Although software buyers say such licensing is not their foremost concern, it has become a strong enough wish to begin forcing a solution to the impasse.

Robert Neubecker

Licenses are currently based on one of three criteria: number of users, number of sites or number of users on any given node. Maintenance of the agreements can be cumbersome, especially when the number of users of a software package at a company site can vary at any moment.

Site licenses in a non-LAN environment are in demand by customers because of their concept of unlimited use at one price, says Jeffrey Tarter, editor of "Softletter" in Watertown, Mass. But the compromise that seems to fit best for both buyer and seller is the node situation, he says.

Continued on page 52

JUNE 1991

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4 Stamford, Salt Lake City, UT, Walnut Creek, CA	5	6	7	8
9	10	11 St. Louis	12 San Antonio	13 Honolulu	4	15
16	17	18 Boston	9	20	21	22
23	24	25 Milwaukee	6	27 Raleigh, NC	8	29

Take the First Step Towards Increased Programmer Productivity

Mark Your Calendar and Make Time to Attend

The Micro Focus Developers Seminar

- Reduce costs and increase productivity at your shop with Micro Focus COBOL/2 workstation-based products
- Develop COBOL applications that take advantage of today's Graphical User Interfaces and cooperative processing architectures
- Move IBM IMS, CICS and DB2 application development off the mainframe to the PC

Call 415-856-4161 x460 for more information on the Micro Focus Developers Seminar near you.

MICRO FOCUS

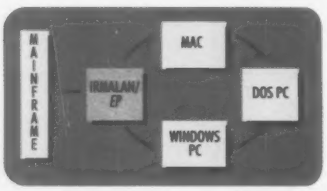
A Better Way of Programming

Why have two gateways when you can accomplish everything you want with just one?

INTRODUCING IRMALAN FOR EXTENDED PLATFORMS

As the mainframe connectivity expert, DCA® has now pioneered new ground with the introduction of our enhanced 3270 gateway, IRMALAN™ for Extended Platforms (*EP*).

With our proven expertise in both PC (IRMALAN) and Macintosh® (MacIRMALAN™) gateway support, in addition to Windows™ 3270 connectivity (IRMA™ WorkStation for Windows), we've developed IRMALAN/*EP* as the single superior gateway solution.



With IRMALAN/EP 3270 gateway, you can support DOS, Mac and Windows clients with a single gateway.

With this single gateway, you can now support DOS, Mac and Windows clients. And it's also designed for IBM® NETBIOS, Novell®'s IPX/SPX protocol* and AppleTalk®.

And by supporting multiple platforms on your LAN, IRMALAN/*EP* eliminates the need to purchase more than one gateway. That's a cost savings that puts it far above anything offered by the competition.

But that's not all. IRMALAN/*EP* comes with RamXpander,™ our memory manager that allows fully featured emulation in less than 40K of resident memory.

Plus, our unique server licensing also makes it one of the most cost-effective gateways available. That's because we base the price on how many users on the LAN need to access the mainframe at once. So you only pay for the access you need, choosing from 8, 32, 64, or 128 concurrent users.

We've even made it easy to purchase IRMALAN/*EP* by including DFT, SDLC and 802.2 token-ring gateway software under NETBIOS, NetWare® and AppleTalk all in one package. So now, migrating to different gateway technologies won't cost a thing.

To get you up and running, the DOS client is also included. To extend your platforms, just add software for Macintosh and Windows users depending on your needs.

So now that there's only one gateway decision, just call DCA at 1-800-348-DCA-1, ext. 70E, to receive free information with further details on connecting your mixed LAN environments to the mainframe.

Or better yet, just call your reseller to order IRMALAN/*EP* today. Because with our new single gateway solution, now there's no need for you to even think twice.

DCA

*Windows client software is not yet available for the Novell IPX/SPX protocol. ©1991 Digital Communications Associates, Inc. All rights reserved. DCA is a registered trademark and IRMALAN, MacIRMALAN, IRMA, and RamXpander are trademarks of Digital Communications Associates, Inc. All other brand and product names are trademarks or registered trademarks of their respective owner.

Law firm saves with Logicraft VAX-to-PC servers

Company realized $400,000 in savings by using DOS-based servers between VAXs and end users

ON SITE

BY J. A. SAVAGE
CW STAFF

SAN FRANCISCO — Stuck with a Digital Equipment Corp. VAX-based system that had only a bit of the usefulness promised by the consultants who installed it, the law firm of Cooley Godward Castro Huddleson & Tatum found it could get the requisite applications by using DOS-based servers between its VAXs and its end users for a fraction of the cost of finishing the promised VAX system.

"Rather than spending $60,000 on a VAX [software product], we spend $1,200 on DOS for the same usage," said Michael Armstrong, system manager at the firm. He was able to save an estimated $400,000 over the last few years by installing Logicraft, Inc.'s VAX-to-personal computer servers. The Nashua, N.H.-based company's products support multiple DOS users accessing VAX data on computers called 386Ware and 486Ware. Armstrong has two of the former for eight users and one of the latter for another eight. About 500 employees directly access the VAXs but are not heavy computer users.

Many of those light VAX users are attorneys in the downtown law firm here, which specializes in business, real estate and patent law.

Making paper

Much of the VAX use is for the company's document indexing database; however, the productive use of computers is at the PC level in word processing, Armstrong said. "Mostly what we do is make paper."

Armstrong found there were cheaper ways to "make paper" than to use a terminal-to-VAX setup. Innovation was necessary because the VAXs installed by outside consultants in 1988 — "Wilma," a VAX 6000 Model 420, and "Fred," a VAX 6000 Model 330 — did not deliver what the consultants had promised. "They told us we'd have automated litigation support packages within six months, but they left in three [months]," Armstrong said.

Thus, the firm is using PC software instead of VAX software where possible because it is less expensive and easier to maintain, according to Armstrong. A database for the firm's DOS users costs about $5,000. "It would be far, far, far too expensive to buy the same DEC product," he said.

Not all for VAXs

"There are also software packages available for the DOS-based system that are not available on VAXs, like some spreadsheets and databases," said Bob Coble, data center manager.

Did Armstrong search the country for a DEC niche product to help him out? No. "Logicraft found us through Dexpo [West '91]," he said. From there, Cooley Godward became a beta-test site for Logicraft. Armstrong added that "while I'm a complainer," it is easy to get engineering answers from the company.

Logicraft's servers are slightly different than typical file servers. Instead of simply serving PC users for word processing and small database access, they also access the vast numbers of legal documents stored on the VAXs. Their strong point, according to Coble, is that PC users who primarily do word processing can access spreadsheets and databases through the Logicraft servers.

"But nothing comes free," he said. "Its weak point is at the interface level, where it has to pull data from the VAX. If we have big database applications, it runs so slow that it becomes unusable."

Cash benefit

The San Francisco-based law firm of Cooley Godward Castro Huddleson & Tatum found hefty savings in its PC software solution

- Consultants left unfinished VAX system for law firm and presented the prospect of considerable costs to complete it.
- Installed Logicraft, Inc. VAX-to-PC servers.
- Most software resides on PCs, saving an estimated $400,000.

CW Chart: Janell Genovese

System 7.0, Windows tackle data updates

ANALYSIS

BY JAMES DALY
CW STAFF

Apple Computer, Inc. and Microsoft Corp., two companies known for butting heads in both the marketplace and the courtroom, may disagree on many matters, but there is one topic that firmly unites them: interapplication communication.

Both Apple's System 7.0 and Microsoft's Dynamic Data Exchange (DDE) features allow data to be moved among applications, then automatically updated as the information is modified. Similar in concept, their execution is decidedly different.

First the basics: Apple's Publish and Subscribe is an integral component of System 7.0 that allows text and graphics in separate applications to remain linked as they move from one document to another. When changes are made to the original document, these alterations are automatically updated in all files using that information.

Nightmare prevention

Suppose a company wants to redesign a corporate logo — a piece of artwork incorporated into hundreds of documents ranging from advertisements to stationary designs. Updating all the disparate documents would be a logistical nightmare.

With System 7.0, users can "publish" a document with the corporate logo that other users or subscribers can then import into their own documents. When the original item changes, all subscribers are automatically updated the next time they call it up. "It's an excellent framework for tying together the many threads of a large department," said Rob McPhee, a senior engineer at Du Pont Co. in Wilmington, Del. However, there is one catch: Software developers must update their applications in order to take advantage of Publish and Subscribe.

System 7.0 also includes program linking, which allows an application to trigger events in other applications. Apple provides the hooks, called Apple Events, so users may open, save, print, copy or close files of one application while they are in another. Again, it is up to the developers to add the Apple Events functionality to their applications.

Users said the success of System 7.0 hinges on how well forthcoming applications integrate the new features. "System 7.0 can be a big deal or just a cosmetic increase, depending upon what developers do with it," said Rick Marolt, information systems manager at Great Central Insurance Co. in Peoria, Ill. A steady stream of applications that take full advantage of the linking features in System 7.0 is expected within six months.

Apple paved a fast lane to System 7.0 applications development last week when it announced an open scripting architecture that builds in Apple Events, enabling users to more easily customize their packages to include interapplication capabilities.

Working together

Microsoft's approach to data linking is through DDE, the main interapplication communication method used in Windows 3.0. Unlike Publish and Subscribe, DDE is a messaging protocol in which the interoperating applications must be modified to work with each other.

"Remember the intercoms you made as a kid with two paper cups connected by a string? DDE is the string, but if you don't have the paper cup at each end, it doesn't do any good," said Larry Jordan, senior director of product marketing at Ventura Publisher, Inc. and creator of the Ventura Publisher desktop publishing package.

Microsoft, however, is working on a further enhancement called Object Linking and Embedding (OLE), which builds the linking mechanism into the operating system. OLE will be included in Windows 3.1, which is expected by the end of the year. Unlike Publish and Subscribe, OLE will not be able to work over networks but is expected to work only on local hard disks.

Despite the advances made in connecting disparate data, there is still one important feature that both Apple's and Microsoft's methodologies lack: They do not work in cross-platform environments.

"When both linking technologies work in mixed environments, then we'll have true interapplication communication," Jordan added. "We're keeping our fingers crossed."

XDB. DB2 ON YOUR PC.

It Saves.
Why use expensive mainframe CPU cycles for development that could be done faster and easier on the PC? XDB-Workbench for DB2 lets you develop and test COBOL programs with embedded SQL on your PC.

PC WEEK "The cost-benefit ratio is tremendous. PC development platforms—as opposed to the mainframe—offer consistent and rapid response and richer tools for testing."
Jim Graves, Ford Motor Company

It Works.
If your application runs on XDB-Workbench it will run on DB2. No compromise. No expensive application recoding needed. The XDB-Workbench provides complete DB2 functionality on your PC.

COMPUTERWORLD "Because it supports DB2's syntax error codes, data types, and semantics, XDB is an excellent DBMS for developing DB2 applications on a PC."
Richard Finkelstein, Performance Computing

It's Proven.
Over 10,000 XDB-Workbench installations are offloading DB2 development to the PC. It works perfectly with both Micro Focus COBOL 2 Workbench and Realia COBOL for complete DB2 application development.

DBMS "It runs on the mainframe just like it did in the PC environment."
Earl Hoskins, AT&T

So get off your mainframe and put XDB on your PC. Call 301-317-6800

xdb XDB Systems

XDB Systems, Inc. XDB is a trademark of XDB Systems, Inc. DB2 is a trademark of IBM. Other products mentioned are trademarks or registered trademarks of their respective holders. PC Week June 12, 1989. Computerworld December 4, 1989. DBMS.

Pen-based future looks bright

Comdex attendees had positive reactions to pen-based applications

BY MICHAEL FITZGERALD
CW STAFF

ATLANTA — At Comdex/Spring '91, it seemed that pen-based notepad computers were the darling of the industry, although it is difficult to figure out exactly what use they might serve.

In fact, pen-based systems, which do not necessarily recognize handwriting, barely exist beyond such products as Grid Systems Corp.'s Gridpad and Microslate, Inc.'s Datellite.

Still, the possibilities have prompted observers such as Portia Isaacson, principal analyst at BIS Strategic Decisions' New Desktop Strategies Group, to say, "[Pen-based] computing is the biggest thing to happen since computing began."

Big is actually a misnomer because pen-based systems do not look to be large but rather notebooksize or smaller. Some of the attention comes because notepads offer a new twist on computing.

"[Pen-based systems] are one of the biggest areas of vaporware around, but it will be an exciting area once it really starts to solidify," said Peter Teige, a laptop analyst at Gartner Group/Infocorp in Santa Clara, Calif. "There are a lot of vendors interested in the technology, and a lot of people see a lot of potential [for it]."

Among these vendors are IBM, Microsoft Corp. and NCR Corp. This year NCR will introduce its System 3120 notepad, based on Intel Corp.'s 80386SL, and may be shipping the machine as early as September. IBM has announced plans to develop a pen-based system, to be introduced some time in 1992, and Microsoft has announced Pen Windows, a pen version of its Windows 3.0 package.

Smaller vendors are also jumping into the market and, in a sense, driving it. Among these vendors are Go Corp., developer of Penpoint, an operating system designed specifically for a pen environment, and Slate Corp., which has already released pen-recognition applications and is

expected to release more.

Part of the interest these vendors have is a market Infocorp predicted will sell 2 million hardware units in 1995, creating an installed base of 3 million. But attendees at Comdex heard panelists talk about other factors, primarily the chance to bring completely uncomputerized users to computing.

"There's going to be a brand-new market of users," said S. Jerrold Kaplan, chairman of Foster City, Calif.-based start-up Go. "A laptop is a desktop you carry from one place to another and is not for the mobile professional — they leave their portables in the hotel room because you can't do business with it."

Still some questions

Kaplan's comments were echoed by other members of a panel on trends in portable and handheld computing. Of course, this begs the questions of how users will use a brand-new operating paradigm or how software vendors will be persuaded to develop for a market that does not exist yet.

Alok Mohan, vice president of the Workstation Products Division at NCR, told the audience that users will gain significant paybacks in increased productivity, reduced costs and better customer service, among other things, when pen-based computing becomes more widespread. Specific users would include mobile sales professionals, service-oriented professionals, such as insurance adjustors or airplane duty-free salespeople, and field service technicians.

There might be more software available for the new boxes than one might think.

Pradeep Singh, Microsoft's group product manager of the pen-based computing product unit, broke the software field down into two groups: pen-capable and pen-centric.

"Any existing Windows [application] is pen-capable," Singh told the audience. "When the machines ship, these will run as if they were pen-based [applications]."

Singh said this will give the market plenty of time to adapt to the new machines as pen-centric applications are developed.

Vern L. Rayburn, chairman and chief executive officer of Slate, told the audience, "If the Macintosh was the computer for the rest of us, the pen is the computer for all of us." However, he warned that "pen-aware applications will hold back pen-based computing."

Rayburn said pen-aware or pen-capable applications, such as those that run in Microsoft's Windows, will fail to take advantage of what he termed the "intimate" nature of pen-based computing.

Portable cuts not likely

BY MICHAEL FITZGERALD
CW STAFF

First Compaq Computer Corp., then Toshiba America Information Systems, Inc. slashed prices on their portable computers. But analysts said this will not mean top-to-bottom cuts on portables.

"I don't feel at this point that [widespread cuts] are too likely," said Peter Teige, an analyst at Santa Clara, Calif.-based market research firm Gartner Group/Infocorp.

Teige said the sudden rush of competitors to the market probably hastened the Compaq and Toshiba price cuts.

Some had other thoughts.

"In reaction to what we've done, I would anticipate that the momentum from the end-user community was so strong for Compaq that [Toshiba] decided they needed to be competitive, so they made their changes," said Ross Cooley, vice president of Compaq North America.

Compaq cut list prices across its portable line an average of 27% in April as part of a move to reposition its entire personal computer pricing. This brought Compaq's list prices below those of rival premium portable maker Toshiba.

Toshiba's subsequent 19% to 33% cut again places its machines under Compaq's retail prices in this game of laptop leapfrog.

Since then, at least two vendors have cut prices: Texas Instruments, Inc., an upper tier laptop vendor in terms of price, and Samsung Information Systems America, a midlevel vendor. TI cut prices on both its Intel Corp. 80286- and 80386SX-based notebooks, while Samsung made a second price cut of 30% on its Notemaster 386s/16, from $3,999 to $2,799.

Senior Writer Richard Pastore contributed to this report.

PC & WORKSTATION SHORTS

Veritel takes to low end

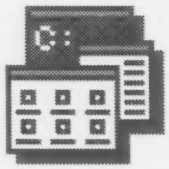
At Comdex/Spring '91, Christopher Daly, president of **Veritel, Inc.**, demonstrated a low-end multimedia prototype that eschews compact disc/read-only memory. The personal computer will be delivered next year for less than $1,499 fully configured, according to Daly. The system uses an Intel Corp. 80386SX processor with 2M bytes of random-access memory and a 100M-byte hard disk.

Object Design, Inc. announced an August ship date for the Pre-Release Software Developers' Kit (SDK) for Objectstore for Windows, an object-oriented database that works with **Borland International, Inc.**'s C++. The $4,995 SDK will be delivered at summer conferences and includes one year of technical support and three days of training and conference participation.

User group forms alliance to benefit Windows users

BY PATRICIA KEEFE
CW STAFF

Ever on the prowl for information about Windows 3.0? Unprecedented sales of Microsoft Corp.'s windowing environment have prompted a seemingly endless wave of resources to cope with, or maybe just commiserate about, the mysteries of Windows.



The Windows Users Group Network (Wugnet) has formed the Corporate Windows Forum (CWF), an international computer conferencing and technical information exchange service for users who want to share practical tips and discuss corporate Windows and OS/2 computing and development issues.

According to Wugnet, hot topics include client/server strategies, in-house Windows development, network site licenses, overcoming DOS-to-Windows barriers and downsizing.

The players involved

The CWF board of advisors includes Daniel J. Willis, senior analyst at 3M Co.; Cheryl Currid, a consultant at Currid and Co.; Brian Moura, assistant city manager, city of San Carlos, Calif.; and George Roukas, director of systems at a Fortune 50 financial services company.

Ray Elseth, Wugnet's director of on-line services and a technical associate to Compuserve's Microsoft Advanced Windows Forum, oversees CWF. Beyond problem resolution and technical discussions, Elseth predicted that the forum will generate a library of white papers on key issues and will act as a clearing-house for corporate Windows users.

The annual corporate membership fee is $495 in the U.S. and $550 in Canada. Additional corporate memberships can be purchased for $75 ($90 in Canada). Wugnet can be reached at P.O. Box 1967, Media, Pa. 19063 or via Compuserve.

Windows users should also note that many local personal computer user groups, such as the New York PC Users Group, are in the process of launching Windows special interest groups. Wugnet said it can help track down these special interest groups.

Users plotting a large-scale migration to Windows are the target audience of Canton, Mass.-based distributor Corporate Software, Inc., which is now shipping its Windows Migration Project Planning Manual. Corporate Software's 145-page reference guide costs $795 and was designed to assist information systems managers through four migration phases, including analysis, planning, migration and operations.

The manual is said to provide detailed instructions for conducting more than 150 distinct tasks associated with workgroup migration and includes sample documents on disk for user orientation, hardware and software inventory data gathering and user proficiency assessment. Also included is a disk containing a predesigned Windows migration project plan file created in Microsoft's Project for Windows.

Corporate Software also announced the beginning of the Windows Migration Project management workshops. These workshops are based on the planning manual and were designed for managers who are responsible for migrating users to Windows.

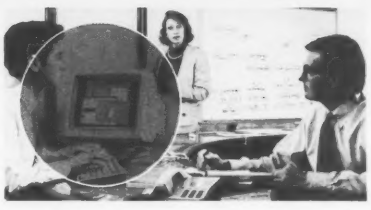
Widespread use

Windows training programs are springing up virtually everywhere. At the recent Comdex/Spring '91, Atlanta-based Comsell, Inc. announced what it claimed is the first interactive multimedia Windows courseware. Windows Basics is a three-to five-hour program that reportedly teaches the basic skills and fundamentals necessary to run Windows applications.

Interactive and motion video technology allow the user to toggle back and forth between the application itself and the instructor. That way, users get hands-on experience, according to the company.

Windows Basics retails at $1,195 and is scheduled to ship late this month.

YES. I'd like to re-FOCUS on Application Development.



Please send me information on FOCUS for:

- ☐ VM MVS
- ☐ OS/400
- ☐ PCs DOS, OS/2
- ☐ VAX/VMS
- ☐ ALL-IN-1
- ☐ UNIX
- ☐ HP
- ☐ TANDEM
- ☐ WANG
- ☐ Connectivity

NAME TITLE/DEPT.

COMPANY

ADDRESS

CITY STATE ZIP

( )
TELEPHONE

DATABASES USED

OPERATING SYSTEM

MACHINE TYPE

FOCUS
Information Builders, Inc.

1-800-969-INFO
(Outside the US 212-736-4433, X3700)

This advertisement refers to numerous products by their trade names. In most, if not all cases, these designations are claimed as trademarks or registered trademarks by their respective companies.

CW 6/3

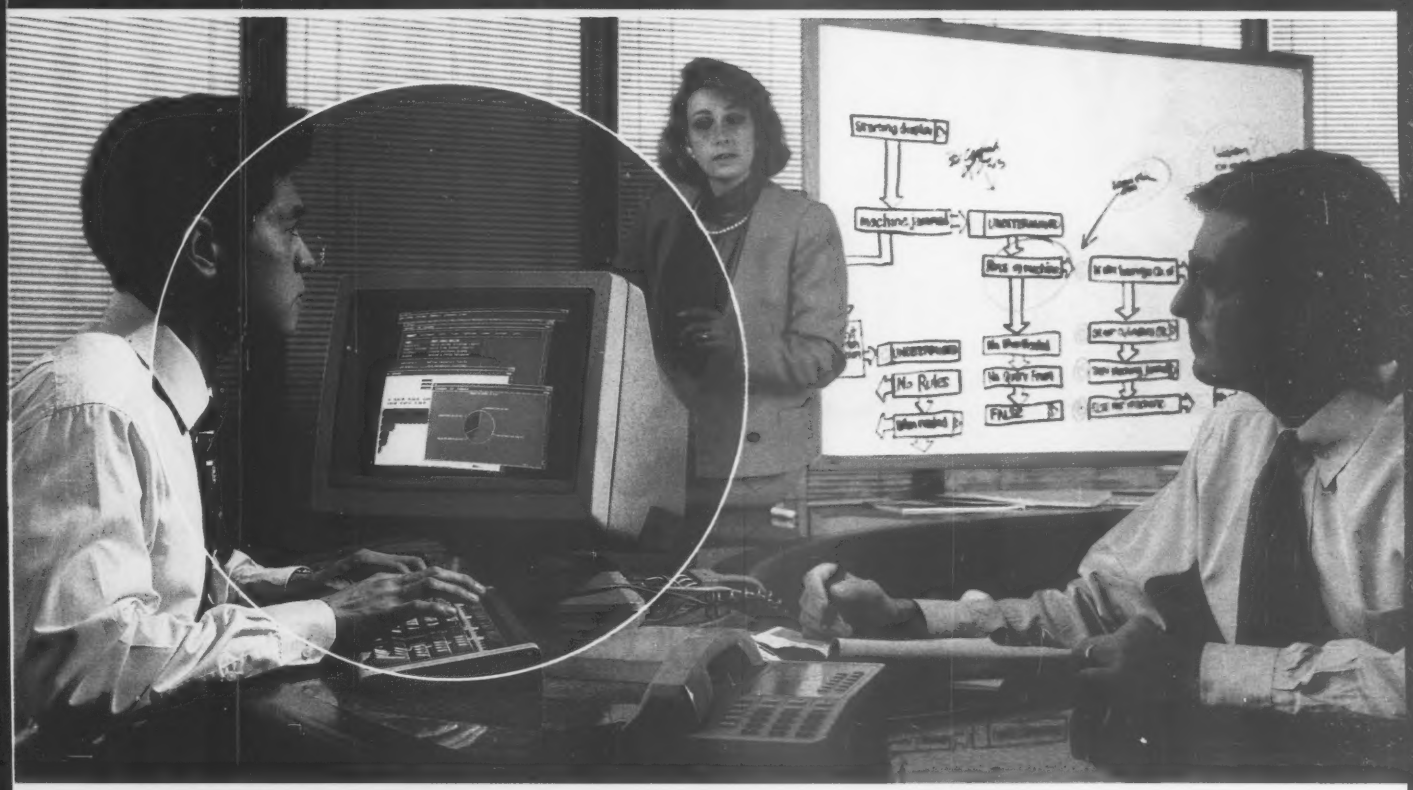
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1305 NEW YORK, NY

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN: Product Information Center
INFORMATION BUILDERS, INC.
1250 Broadway
New York, NY 10117-0582

If you need more productivity in application development...



It's time to re-Focus.

If application maintenance is strangling new development and the backlog is hurting your company's bottom line, it's time to re-FOCUS.

FOCUS, the world's leading 4GL, provides the most comprehensive toolkit for developing complete information systems for multi-vendor and multi-data environments. That's why more than 800,000 people worldwide use FOCUS.

COMPREHENSIVE TOOLKIT WITH FOCUS

FOCUS provides an integrated development environment that delivers all the tools you need to quickly create complete applications. The powerful FOCUS 4GL allows application prototyping, cuts coding time, speeds maintenance, and enables you to test applications on one platform and deploy them on another. And, you can build "smart" applications that automate decision-making by integrating the LEVEL5 expert system—directly within FOCUS applications.

BUILD INTEGRATED INFORMATION SYSTEMS WITH FOCUS

FOCUS tools and applications are portable to over 30 hardware platforms plus 40 database and file types. Support for all major communications standards allows you to build client/server applications that can transparently access data across a wide range of multi-vendor systems.

Over 4,000 companies using FOCUS average one new application a month. If your current application development environment is not matching this proven track record of productivity, call us toll free at 800-969-INFO.

Or write Information Builders, Inc., 1250 Broadway, New York, NY 10001.

FOCUS
Information Builders, Inc.

IT'S TIME TO RE-FOCUS

800-969-INFO
(Outside the U.S. 212-736-4433, X3700)

This advertisement refers to numerous products by their trade names. In most, if not all cases, these designations are claimed as trademarks or registered trademarks by their respective companies.

Two bottom for buying a

1. New Prices.

Recently, Compaq significantly reduced prices on its most popular personal computers and PC systems. This will have a tremendous impact on your bottom line. And not because of cost alone.

Our new prices mean there's nothing now standing between you and the high performance of COMPAQ. You won't have to make do with a compromise instead of the COMPAQ PC you want.

Our new prices also mean you can afford to let all your users work with the PCs that simply work better.

COMPAQ PCs deliver optimal performance, so your users will spend less time waiting. And more time working.

Our PCs endure relentless reliability tests, so downtime is reduced. And as we all know, downtime means money.

COMPAQ PCs also offer the utmost in compatibility. So you can spend your time working on business issues, not computer issues.

COMPAQ, Registered U.S. Patent and Trademark Office. © 1991 Compaq Computer Corporation. All rights reserved.

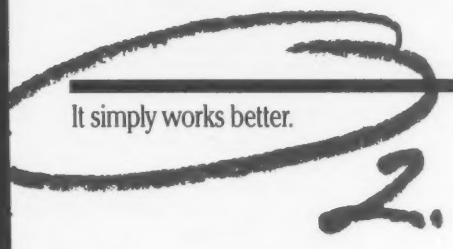
-line reasons COMPAQ PC.

Finally, COMPAQ PCs are supported by one of the best-trained dealer networks in the industry. Dealers who are committed to giving you comprehensive computing solutions, not just computers.

From the beginning, COMPAQ PCs have delivered the performance, reliability and compatibility you've asked for. Now, they also deliver it more affordably.

All this makes quite a statement. Especially on your bottom line.

To get the facts, call your Authorized COMPAQ Computer Dealer for pricing and product information. Or call 1-800-231-0900, Operator 161, and we'll mail you our new suggested resale prices and the location of the dealer nearest you. In Canada, just call 1-800-263-5868, Operator 161.



COMPAQ

It simply works better.

Site licenses

CONTINUED FROM PAGE 45

"It's essentially on the honor system," Tarter says. "I'm finding that even the companies that were slow to come to the site license and network license route are bowing to the idea."

Most PC software companies are moving toward "counter-based" pricing, Tarter says. "There's some sort of software device built in that counts the number of concurrent users. The concept is called a lending library approach. You have the right to use X number of copies concurrently. When all the [copies] are in use, and an extra user tries to log on, a message comes up and says all the copies are in use. Companies will then buy another license," he says. "This seems to be the dominant solution. The problem is that it represents a substantial loss to the software company."

Mort Rosenthal, president of Corporate Software, Inc., a reseller in Canton, Mass., says a vendor's size and revenue need can be factors in a user being able to negotiate a deal.

"The only vendors [selling on an unlimited use license] are the ones desperate for cash," says Rosenthal, who emphasizes the lack of large vendors willing to market a site license. "This is because it cuts off the revenue stream from the customer once the software is purchased. The only ones who are doing it this way are small vendors and Computer Associates. The only other reason to sell site licenses is if you don't think you're going to make any other money from the customer or if you're not the preferred vendor."

INFORMATION SYSTEMS departments have grown accustomed to widespread software use as it exists in the mainframe world. Because of this, users are spoiled, according to experts. They expect the same rules to apply to the PC arena.

Information systems departments have grown accustomed to widespread software use as it exists in the mainframe world. Because of this, users are spoiled, according to experts. They expect the same rules to apply to the PC arena.

"It's not really coming into vogue," Tarter says. "Mainframe licenses are very precise. They actually identify classes of hardware, the number of terminals — a very detailed calculation. PC software companies that have looked at mainframe licenses can't believe what they're seeing. They can't possibly sell software that way."

At Burlington Air Express, Inc. in Tustin, Calif., the transition from the mid-range world to the LAN realm is being evaluated. Licensing problems alone for the LAN have discouraged administrators and raised several eyebrows toward reconsidering the shift, says John Shupe, director of station equipment, planning and support at Burlington.

While users place licensing terms high on their shopping list of considerations, they also seek a variety of items when selecting software products.

"We prefer site license companies, but it doesn't make the decision complete," Shupe says. "If we want or need the software, then we'll buy it regardless of the way the license is handled. To qualify, if the competition is strong in the market, then the service and technical support become as big an issue as anything else."

Jim Turner, a staff specialist at the South Coast Air Quality Management District in El Monte, Calif., prefers site licenses like the one he has with Xtree, a file manager from Xtree Co. in San Luis Obispo, Calif., but agrees that is not the top factor when deciding on a purchase.

"Support comes first to mind," says Turner, who maintains the licensing for 700 users. "It's a big issue. We have a large house, so we have a lot of expertise. But having to call across country on your dime [when owning per-user licenses] for support, it's not very cost-effective. With site licensing, you mostly get an 800 toll-free number. Companies like Xtree give us a single disk, so we don't have to inventory the disk. We have a department that specializes in maintaining the software." However, for use of Lotus Development Corp.'s 1-2-3 spreadsheet, which is licensed for 400 users on a per-user basis, Turner says that only 400 can access the application at any given time.

Rosenthal adds: "Most companies pick the product they want to use from the features and functions, and then they talk about the license. It's not what drives the [decision to buy]."

One top executive at a large Northeastern bank who requested anonymity says he does use his firm's size as a bargaining chip with vendors: "We do not negotiate prices. We seem to be getting good prices on site licenses by going one-on-one with the vendors. We decide the price and then negotiate with the vendor. It's a sticky issue."

This user claims his company can purchase Novell software at substantially lower prices from a third party than if it were to buy from Novell directly. "Novell increases the price significantly for someone with a thousand nodes, sometimes doubling and tripling the costs," he said. "So people are very resistant."

Kramer is a free-lance writer based in Irvine, Calif.

dFacts Are In.

DATABASE COMPARISON TABLE	dBASE IV version 1.1	Paradox version 3.5	FoxPro version 1.02
EASE OF USE			
Control Center organizes data, queries, forms, reports, labels, applications on one screen	Yes	No	No
Create applications *without programming*	Yes	Yes	No
Modern pulldown menus for all Design Tools	Yes	No	Limited
Query by Example (QBE) for easy access to information	Yes	Yes	No
Context specific help by menu item	Yes	No	No
PRODUCTIVITY			
Quick Layout for automatic forms, reports and labels	Yes	No	Yes
Application Generator for quick application development	Yes	Yes	No
Automatic code generation for all Design Tools	Yes	No	No
Automatic maintenance of multiple indexes for ordering data	Yes	No	No
Memo fields for notes, letters, descriptions	Yes	No	Yes
POWER & FLEXIBILITY			
Bold, underline, italic, subscript, superscript text for high impact reports and labels	Yes	No	No
User Defined Functions for extending programming language	Yes	No	Yes
Data input validity checking in forms	Yes	Yes	Yes
Multi-user transaction processing ensures data integrity	Yes	No	No
Number of file formats imported/exported	7	6	3
INDUSTRY STANDARDS			
#1 Selling, #1 Rated multiuser database; over 3 million users (1)(2)	Yes	No	No
Compatible with dBASE III PLUS data and applications	Yes	No	Yes
Compatible versions for DOS, VAX VMS, Macintosh, SunOS and other UNIX platforms (3)	Yes	No	Limited
Structured Query Language (SQL) integrated with programming language	Yes	No	No

(1) dBASE III PLUS and dBASE IV comprise approximately 55% of PC database systems sold (3 times nearest competitor) according to the most recent report by the market research firm Audits & Surveys (Oct. 1990) (2) Software Digest rated dBASE IV #1 among multiuser databases, October 1990 (3) Versions of dBASE IV are shipping for DOS, VAX, and SunOS. Macintosh and other UNIX Platforms are announced.

Based on what our customers tell us, we made a list of some of the most important features to look for in data management software.

Then we compared the new dBASE IV® version 1.1 with two other database products.

As you can see, dBASE IV offers exclusive advantages in many categories.

For instance, only dBASE IV lets you access all its functions from a single screen. Called the Control Center, this screen lets you manage existing data, and create new tables, queries, reports, forms and labels totally without programming.

When all the facts are on the table, it's easy to see which database software is best.

Of course we aren't the only ones who have come to this particular conclusion.

Software Digest rates dBASE IV version 1.1 the #1 Multiuser Database (Vol. 7, No. 13, Oct. '90).

Trademark/owner: dBASE IV, Ashton-Tate, Ashton-Tate logo/Ashton-Tate Corp. Other company or product names mentioned may be

Sun's answer: CD-ROM

Firm provides systems, software documentation on disc

BY CHRISTOPHER LINDQUIST
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. recently said it is offering all 16,000 pages of its systems and software documentation on a single compact disc/read-only memory.

System Software Answerbook allows users to view exact replicas of manual pages on-screen, eliminating the need for the 100-plus pounds of reference manuals previously required.

Users can look through documentation page by page, search for keywords, place bookmarks with attached memos, click on hypertext links to see cross-referenced information and print pages on Adobe Systems, Inc. Postscript-compatible printers.

Quick answers

Stan Hackney, an Answerbook beta-test user and principal engineer at Agfa Compugraphic Division in Wilmington, Mass., said using Answerbook is saving his company money by shortening the time it takes to get questions answered. The system's convenience makes users more inclined to use the manuals, so they are "being right sooner," saving time normally spent searching through documentation or asking questions, Hackney said.

Also, field support representatives can reduce their time per call, which Hackney said is a "perfect example [of] where time is money." He added that "one of the big problems was that no one could ever find the manual . . . The [Answerbook] kind of helped get us past that."

Mark S. Bercow, senior product marketing manager at Sun, said Answerbook is a product family name, and users can expect to see documentation for other Sun products available in the same format in the future. He also said he anticipates support for third-party documentation products using the Answerbook system.

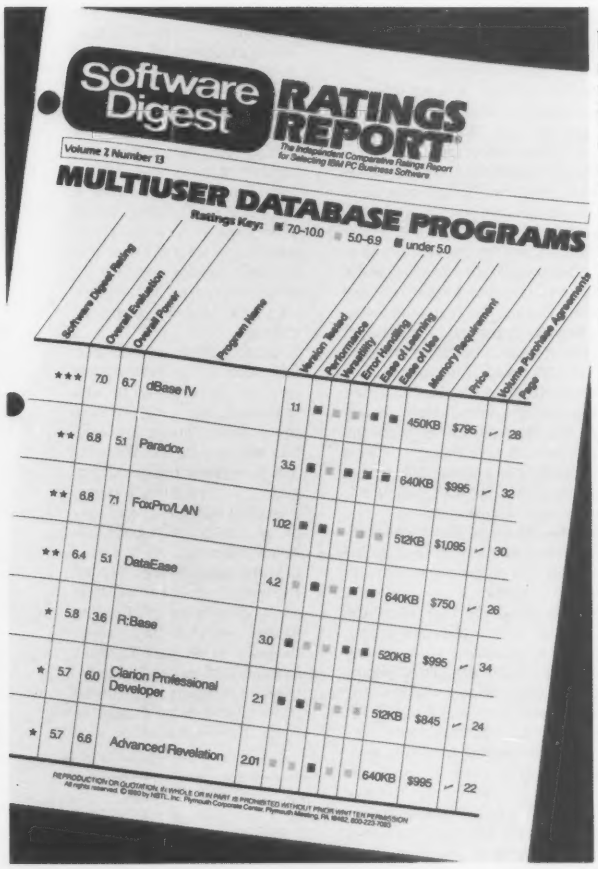
Tutorial included

System Software Answerbook includes a tutorial and complete documentation for the SunOS operating system, the computer hardware and Sun's Open Look graphical user interface.

Licensees are authorized to print a complete paper copy of the documentation, which could be used in the event of a system failure.

The product is currently available and costs $495 for a single workstation license. Additional networked stations can be licensed for $250 each. Site licenses are also available.

dTruth Comes Out.



Perhaps the most independent publication in the industry, *Software Digest* accepts no advertising whatsoever. Corporations pay hundreds of dollars a year to receive their monthly reviews—which are considered highly unbiased and objective. Their exhaustive, 75-page report concludes:

"Among the top ranking programs, dBASE IV (version 1.1) is the most well-rounded, with solid performance, versatility, and usability." Commenting on speed, *Software Digest* points out that "dBASE IV produces all three test reports as fast as or faster than FoxPro/LAN." As for Ease of Use and Ease of Learning, dBASE IV scored in the Excellent Range as many times as any other multiuser database product tested.

For a free evaluation kit, including competitive details and a free demo disk, call toll-free: 1-800-437-4329 ext. 1416. Better yet, call 1-800-2ASHTON to upgrade to the new dBASE IV now.

The truth is, no other database can do so much to improve productivity.

Ashton-Tate

trademarks of their respective companies. © 1991 Ashton-Tate Corporation. All Rights Reserved. GTSI's GSA Schedule #: GS00K90AGS5216, or call 1-703-631-1177.

Sun to VARs: No clone sales

BY J. A. SAVAGE
CW STAFF

While on the one hand pontificating for open systems and engendering its own clones and compatibles for the open systems market, Sun Microsystems, Inc. has notified its resellers that selling those clones will take them out of Sun's good graces.

Although calling the move "stupid," Doug MacGregor, president and chief executive officer of Solbourne Computer, Inc. — a maker of Scalable Processor Architecture (Sparc)-compatible machines — said it will be to users' benefit because it will heat up competition. In other words, the move will allow those with direct sales forces, such as Solbourne, to offer better deals against value-added resellers (VAR) that are limited to Sun-only retailing.

One company that had nearly become a Sun VAR is glad it never signed the VAR agreement. Mike McKenna, marketing manager at San Diego-based Open Computing Systems Corp., said that by remaining independent, he has more flexibility to sell hardware at the best price.

"End users frankly don't care whether Sun makes the computers. They care about Sparc International [which certifies that Sun software will run on clones and compatibles]. All they care about is the technology," McKenna said.

"It tarnished their perceived image but not their business," said Jeffry Canin, an analyst at Montgomery Securities in San Francisco.

Sun's rationale

On its behalf, a Sun spokesman said that because the vendor is paying for training and education of its VARs, "we don't think others should be able to tap into it.

"Open systems has nothing to do with the resale channels," he said. "Open is defined by interfaces."

MacGregor disagreed. "This paints distributors, VARs, into a corner and clearly sends a message of who's open and who's closed," he said.

VARs have been verbally notified of the change by Sun and have a few months to evaluate Sun's new contracts, according to the spokesman.

None of the VARs contacted by *Computerworld* returned the calls.

Wordperfect 5.1: Easier to use, feature-rich

Wordperfect Corp.'s Wordperfect Version 5.1

Reviews	Performance	Ease of use	Editing capability	Printer support	Network support	Documentation	Service	Value	Score
Infoworld 1/7/91	Very good	Very good	Very good	Excellent	Very good	Very good	Very good	Excellent	8.0*
PC Magazine 12/11/90	Fast on its feet	Easy to learn	Flexible and powerful	Powerful	NC	NC	NC	More features than any other	Editor's choice
PC World 6/91	Excellent	Good	Excellent	Good	NC	NC	Excellent	Excellent	Exhaustive features
Users									
Arlene Askew, Wisconsin Dept. of Health and Social Services	■	▙	■	■	■	▙	■	■	Excellent product
Steve Isenberg, Easel Corp.	■	■	■	■	■	▙	■	■	Feature-rich
Ross Nichol, First Security Corp.	▙	■	■	■	■	▙	■	■	Good for desktop publishing tasks
Analysts									
Oliver Picher, Datapro Research Group	■	▌	▙	■	NC	▙	■	▙	Responsive and flexible
Scott Higgs, National Software Testing Labs, Inc.	■	▙	■	■	▙	▙	■	■	Vast, competent
Jerry Caron, Faulkner Microcomputer Reports	▙	▌	■	■	▙	▙	■	■	Cream of the crop

Key: ■ Very good ▙ Good ▌ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey.
**Infoworld* score based on 1 to 10 ratings. NC: No comment

Technology Analysis — A roundup of expert opinions about new products. Summary written by free-lance writer Suzanne Weixel.

Wordperfect Corp.'s Wordperfect 5.1 integrates every feature imaginable into a fast, powerful package that walks the thin line dividing word processors from desktop publishers. According to reviewers, the only thing that keeps Wordperfect from meeting the challenge of being all things to all people is its own complexity.

Performance: For such a large package, reviewers reported, Wordperfect is surprisingly quick. It requires 384K bytes of random-access memory, and a hard disk is recommended. It can import and export most text and graphics formats, and it has a complete macro language with programming constructs, a mini macro editor and a macro recorder. For error handling, it offers automatic timed saving of information and a three-level "undelete."

Ease of use: Reviewers reported that Wordperfect 5.1's context-sensitive Help, on-screen tutorial, optional pull-down menus and basic mouse support make the program easier to use than earlier versions. Still, its function key-based interface often relies on less than intuitive combinations, and inconsistencies among functions can be annoying. For instance, *PC Magazine* noted that users must press the Home key twice, followed by the Up arrow to get to the top of the text in a file, but they must press the Home key three times to get to the top of a section of code.

Editing capability: Because it is character-based, Wordperfect offers no what-you-see-is-what-you-get (WYSIWYG) editing capabilities. Editing is done on a clean screen, and to edit the format or other code, a "reveal codes" window must be opened. Other than that, reviewers said, Wordperfect does just about everything automatically. In addition, it includes complete and effective tools for searching, sorting, proofing, mail merge, reference and layout. Notably, it has a table editor, an equation composer, WYSIWYG page preview and graphics support with scaling, cropping and revision marking. It also lets users have both endnotes and footnotes in the same document. What Wordperfect lacks are true automatic style sheets and a grammar checker. Also, the outliner will not collapse text under headings. Still, as *PC Magazine* said, chances are if you want it, Wordperfect does it.

Printer support: According to reviewers, users will be hard-pressed to find a printer that will not work with Wordperfect. It has a printer driver editor, kerning and tracking as well as a landscape printing capability, and it supports all Hewlett-Packard Co. and Adobe Systems, Inc. Postscript fonts.

Network support: Wordperfect handles multiuser functions gracefully, reviewers said. User configuration settings are stored in a master file but can be modified. Files that are already open can be accessed via read-only mode; you can save changes under a new name. It lets users share a master style library, but user spelling dictionaries can be kept private.

Documentation: The documentation is adequate. It consists of one alphabetically arranged reference manual and a good index.

Service: Reviewers raved about the high quality of the technicians and the company's willingness to listen and respond to customers. Twenty-four-hour phone support is available — toll free between 7 a.m and 6 p.m. PST. There is a money-back guarantee.

Value: Wordperfect is not the leading word processing program for nothing. If users do not plan to make the move to a graphical-based word processor in the near future, a quirky function key-based interface is a small price to pay for such a comprehensive set of features and outstanding customer support. Wordperfect 5.1 lists for $495.

Vendor financial information

According to Wordperfect Corp., there are more than 6.3 million Wordperfect users. The company had 1990 sales of $452 million, a 61% increase over 1989 sales of $281 million. Wordperfect is not a public company. W. Christopher Mortenson at Alex. Brown & Sons, Inc. rates the company's short-term performance good and long-term stability very good.

"IF ONLY [Microsoft Corp.'s] Windows supported printers the way Wordperfect does. When you need more than just word processing, yet desktop publishing is too much, Wordperfect can fill the gap."

Ross Nichol
Assistant Vice President
First Security Corp.

Wordperfect responds

Todd Ashman, product marketing director:

Ease of use: The trade-off for having lots of features is that some may be more complex to use than others. If a number of customers tells us that a particular function is awkward or unintuitive, we try to improve it in a future release. In Version 5.1, we have included pull-down menus for people who do not feel comfortable with the function key interface.

Some aspects of Wordperfect, such as the clean screen, may be intimidating to new customers, but we try to keep the program interface consistent and easy to use. Wordperfect is a character-based program, and it is not fair to expect it to have as intuitive and simple an interface as a graphical-based program.

Editing capability: We are addressing the issue of style sheets in a future release, and we hope to do something about the fact that the outliner won't collapse text under headings. Users can adjust the "reveal codes" window to display as few as three lines of code.

NEXT WEEK

▶Wordstar International, Inc.'s Wordstar 6.0 has useful new features, but its age shows when compared with newer packages, reviewers said.

Send my Fastback Plus Upgrade. Fast.

Fastback or Fastback Plus users only! Upgrade to Fastback Plus 3.0 for only $49.
Free Overnight Delivery* • 1-year Money-Back Guarantee

Multiple Copy Registration
A serial number is required for each unit ordered. Please list additional serial numbers on a separate sheet and enclose with your order.

Serial No. _____ Serial No. _____

Serial No. _____ Serial No. _____

Serial No. _____ Serial No. _____

Mail this order form to:
P.O. Box 83260
Baton Rouge, LA. 70884-9928

For Faster Service:
Call Toll-Free: 800-933-0108,
or fax your order to 504-291-5453.

See reverse side for additional information.

*Within the U.S. only. International orders shipped free by regular mail.

201

☐ Yes! I want _____ copies of the Fastback Plus 3.0 Upgrade at $49 each. Enclosed is my payment or credit card information.

Payment Method

☐ VISA ☐ MasterCard ☐ American Express

Card No.:_____ Expiration:_____

Signature:_____

Please print.

Name

Address

City State Zip

Current program version Serial No.

Daytime Phone Number Title

☐ I purchased Fastback Plus after February 1, 1991. Please send me the upgrade for FREE. I've enclosed a copy of my dated receipt.

☐ Check or money order made out to Fifth Generation Systems, Inc.

Check No.:_____

Sorry, no PO's or COD's accepted.

Send me _____ copies at $49=Subtotal _____

Sales Tax _____

(Residents of LA, GA, TX, CA, NY, IL and the District of Columbia must add applicable tax.)

TOTAL _____

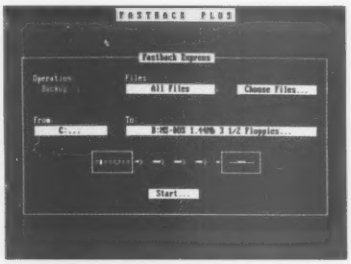
For Faster Service: Call Toll-Free: (U.S.)-800-933-0108; (Outside U.S.)-504-291-7221; or fax your order to 504-291-5453.

Introducing Fastback Plus 3.0

Users will automatically like it.

You should like it; after all, your suggestions helped design it. But we didn't stop there. After we made improvements you asked for, like a new windows-style interface, we added plenty of others.

- An archiving feature that erases unwanted files after backup
- Faster backups and restores: up to 10 mb/minute on some PCs (up to 3mb/minute on an average AT)
- Increased data compression to a full 80 percent, 15% more than version 2.1
- Appending incremental backups
- dBase III-compatible history file database lets you search for and restore specific files
- Backup support for "Bindery and Trustee" files on Novell Netware 286/386



The new fast, simple Express Menu.

And like all Fifth Generation products, Fastback Plus 3.0 is automatically covered by a one-year, money-back guarantee. Upgrade now for only $49 and get FREE overnight delivery*. Just mail or fax the attached reply card with your payment to the address or fax number below. Or call us toll-free. This offer is limited to Fastback or Fastback Plus users with a valid program serial number.

The rest of you will like it because it's automatic.

If you're not backing up regularly, you either don't have the right backup program, or you don't have one at all. Fastback Plus 3.0 solves both problems with an entire program full of time and effort-saving features that make backing up so automatic, you can literally do it in your sleep.

- Scheduler and macro recorder for fully-automated, unattended backups
- Macro editor in plain English instead of DOS commands
- Optional password protection with DES file encryption capability
- New easy-to-use, windows-style interface with Express Menu
- Advanced error correction for recovering data from damaged disks

And these are just a few of Fastback Plus 3.0's new features. Now more than ever, there's really no excuse not to back up your data. Because if you don't want to do it, this program will do it for you. Automatically. For more about Fastback Plus 3.0, call the toll-free number below.

FIFTH GENERATION SYSTEMS, INC

8 0 0 - 9 3 3 - 0 1 0 8

Fifth Generation Systems • 10049 N. Reiger Road • Baton Rouge, LA 70809
(504) 291-7221 Fax: (504) 291-5453

*U.S. destinations only. Fastback Plus 3.0 will not restore backups made with versions 2.09 or earlier.

dBase III and Novell Netware are the respective trademarks of Ashton-Tate, Inc. and Novell, Inc.

Postscript upgrade race begins

BY CAROL HILDEBRAND
CW STAFF

First off the blocks in the Postscript Level 2 upgrade dash is Dataproducts Corp. with a desktop laser printer that incorporates Adobe Systems, Inc.'s first major upgrade of its popular page description language.

"It's a departure from our usual type of product," said William Barclay, Dataproducts' senior vice president of sales and marketing. "We usually concentrate on line and band printers."

Charles LeCompte, editor of "Printout," a Newton, Mass.-based newsletter concentrating on the printer industry, pegged Dataproducts' new direction as one of the interesting factors surrounding the printer's introduction.

"It's a fairly competitive product in its own right — there aren't a lot of RISC-based Adobe printers out there," he said. "But it also marks a big change for Dataproducts."

The LZR60, which at 1.3 feet boasts the industry's smallest footprint for a laser, prints at nine page/min. It uses the 8200 reduced instruction set computing processor from Weitek Corp. with a Sharp Electronics Corp. laser engine.

Barclay said Sharp modified the engine, formerly a six page/min model, to increase the output to nine page/min. The machine connects to Appletalk/Localtalk and IBM Personal Computers. Two megabytes of memory are standard, with available expansion up to 10M bytes.

A much-touted feature of the printer is its support of Postscript Level 2. According to Rob Babcock, product marketing manager at Adobe, Level 2 consists of incorporating into the core Postscript product the changes that have been made to individual Adobe products over the years. Those features include nonroman character sets and encodings.

Level 2 includes the following:

- Color extension.
- Composite font extensions.
- Display Postscript extensions.
- Improved memory management.
- Data and image compression and decompression.
- Forms support.
- Patterns support.
- Automated teller machine font-rendering technology.

However, analysts said the LZR60, a monochrome printer, cannot take advantage of Level 2's color enhancements, which are a major part of the Level 2 upgrade.

"The biggest single significance of having Postscript Level 2 on this printer is marketing, just because it's the first one. But it isn't clear that it will make any difference to users," LeCompte said.

The LZR960 costs $2,995 and is scheduled to ship this month.

Compaq

CONTINUED FROM PAGE 45

other market forces — Compaq projects a 15% decline in revenue for the current quarter. But analysts said the more competitive pricing and enhanced support could pay off in a turnaround later in the year, provided the recession lets up.

The firm is even considering authorizing sales through superstores, something that seemed an anathema to it just last year. "We don't want to turn our back on an emerging segment of the reseller community," said Ross Cooley, Compaq North America vice president. The company is working hard on evaluating this small but rapidly growing alternative channel and ironing out specifics with several dealers, he said.

Initial user reaction to the superstore prospect was mixed. For users who do not need support or plan on purchasing lower end boxes, the convenience and pricing of superstores has appeal. Others said they prefer to stick with full-service dealers for Compaq systems.

Users were consistent in their praise of Compaq's new emphasis on direct contact. In years past, Compaq was adamant about dealing with customers only through its authorized resellers. Only the biggest and loudest corporate customers had meaningful direct access. Now, the firm offers toll-free and for-fee telephone service and has been dropping in on more customer sites.

A for effort

"I'm happy because I see them making a lot of effort to increase support and make people accessible," said Richard Marolt, information services manager at Great Central Insurance Co. in Peoria, Ill. Marolt met with highly placed Compaq marketing staff members and twice called direct phone numbers to talk with "really knowledgeable" sales and technical people.

Before Compaq's change in direct-support attitude, "I never saw anybody," said Compaq Systempro user Michael Ball, data processing coordinator at the Federal Reserve Bank in Baltimore. Since then, Compaq officials have called on him twice during the last four months. "It's encouraging that they're taking an interest in our installation."

Compaq has also begun directing potential Systempro buyers to specialized dealers who have certain areas of network expertise. It would not have considered this practice in the past for fear of upsetting dealers.

SANDRA KURTZIG, CEO OF ASK COMPUTER SYSTEMS

"If GUI application developers could be ten times more productive, what would that do for client-server computing? We're about to find out."

In December, 1990, ASK Computer Systems acquired Ingres, the acclaimed manufacturer of intelligent relational database products. Here, CEO Sandy Kurtzig discusses the dramatic productivity increases reported by developers using INGRES/Windows 4GL, the first complete application development environment for graphical user interfaces:

"I don't see how anyone can keep from getting as excited as we are about client-server computing. The amount of information it puts at the fingertips of the end user is just phenomenal.

"You'll drastically reduce the code you now have to write."

"Of course, that much information can be frustrating—even useless—without an easier way of viewing it. That's where graphical user interfaces are coming into their own. They make vast amounts of data easy to work with, and quick to comprehend.

"But writing GUI applications using a conventional programming language is incredibly tedious. It requires hundreds of thousands of lines of code—60 percent of which do nothing but

NEW PRODUCTS

Software applications packages

Diamond Prospector 1.1, a $195 contact management program, has been released by Diamond Data Management, Inc.

The program incorporates options designed for use on portable computers, including a special video mode for low-resolution screens. Other features are a built-in word processor and one-key access to prospect notes.

Diamond Data Management
740 N. Pilgrim Pkwy.
Elm Grove, Wis. 53122
(414) 786-9000

Automatic number identification capability has been added to Telemate Plus, a personal computer-based call accounting software module from Complementary Solutions, Inc.

In conjuction with the company's Telemate product, Telemate Plus allows businesses to identify employee abuse of incoming and outgoing long-distance personal telephone calls. Users can also determine customers with exceptional service requirements and active sales accounts numbers. A memory-resident component eliminates the need for a dedicated monitoring computer, according to the firm. A report writer and on-line telephone directory are included.

The Telemate Plus module costs $1,145; pricing for the basic Telemate product starts around $1,000.

Complementary Solutions
4470 Chamblee-Dunwoody Road
Atlanta, Ga. 30338
(404) 454-8033

World Software Corp. has announced Extend-A-File, a document management software system for DOS-based personal computers.

The program includes standard file management functions such as copying, renaming, deleting and viewing. Additional features for document management are compression, archiving and version control. Extend-A-File is compatible with Microsoft Corp.'s Windows 3.0.

A single-user copy costs $99.95. Users of the firm's Extend-A-Name application can upgrade for $35.

World Software
124 Prospect St.
Ridgewood, N.J. 07450
(201) 444-3228

Systems

SAI Systems Laboratory, Inc. has introduced a 25-MHz Intel Corp. 80386-based personal computer with an Extended Industry Standard Architecture (EISA) bus.

The small-footprint system includes two floppy drives, a 120M-byte hard drive, 32M bytes of memory and a Super Video Graphics Array monitor. The product is intended to provide EISA compatibility for a lower price than Intel I486-based PCs, according to the firm.

The system costs $2,495.

SAI Systems Laboratory
911 Bridgeport Ave.
Shelton, Conn. 06484
(203) 929-0790

Utilities

Office Solution Version 1.2, task automation software running under Microsoft Corp.'s Word for Windows, has been released by Gilbert & Associates, Inc.

Features incorporated in the upgrade include Microsoft SQL Server and Microsoft Mail support, print billing and enhanced printer support. Performance has also been improved, the firm said.

Moreover, Office Solution handles automatic fax and electronic mail transmission and document management. All tasks can be accomplished without leaving the Word for Windows word processing application.

The price is $395 per workstation.

Gilbert & Associates
Suite H
875 Via De La Paz
Pacific Palisades, Calif. 90272
(213) 454-7679

Database management systems

Condor DBMS Services, Inc. has upgraded Condor3, its database management software.

Version 2.30 simplifies command line operations through command recall and on-line Help. Data-revision and report-writing capabilities are also enhanced, the company reported.

The product costs $395. Upgrades from previous versions cost $95.

Condor DBMS Services
5209 N. Clark St.
Chicago, Ill. 60640
(312) 271-8759

Applied Information Technology has announced SQLDBATK, a database administration tool kit for SQL-based servers running under OS/2.

SQLDBATK features on-line monitoring and problem detection, storage reporting and security maintenance and reporting. The product allows users to perform many administrative tasks without knowledge of SQL commands.

A single license costs $1,195. Site licensing will be available.

Applied Information Technology
Suite 1620
350 N. St. Paul St.
Dallas, Texas 75201
(214) 855-5257

INFORMATION SYSTEMS FOR BUSINESS

produce the GUI itself. Add that to the problems of accessing data from multiple sources, a shortage of developers, and a steep learning curve for existing GUI tools, and you're talking a huge investment of time and money. No wonder client-server applications have been so slow in coming.

"A product that makes programmers up to ten times more productive."

"Well, all that's going to change once developers get their hands on INGRES/Windows 4GL – a tool that helps programmers be up to ten times more productive. At least, that's what some of our customers tell us.

"For starters, INGRES/Windows 4GL allows you to use a mouse to interactively build windows and menus without writing a line of code. Then you assign functions to those components using a very elegant fourth generation language, which a good 3GL programmer can learn in a week or less.

"So, applications that once required thousands of lines of code now take far fewer.

"Unlike simple screen painters and HyperCard-like tools, INGRES/Windows 4GL is designed for full-scale production applications. It helps you manage and coordinate multiple development teams. It even tracks different versions of your applications throughout the company. No wonder it's now being used to create sophisticated applications like shop floor control and critical care medical systems.

"Portability is one of this tool's most profound breakthroughs. An application you create in, say, OSF/Motif will be able to run flawlessly on Windows 3.0, Open Look and other popular systems. With the appropriate look-and-feel in each environment. With full interoperability with other applications. And with no rewriting.

"Your applications will also link seamlessly to the whole range of Ingres products, and – thanks to INGRES/Gateways – to other leading databases.

"Think about it: Client-server applications with GUIs and full portability, in a fraction of the time. This could be the product that finally opens up the workstation for mainstream commercial applications.

"I think it's fair to call it revolutionary."

INGRES/Windows 4GL supports Sun SPARC, DEC VAXstation/VMS, DECstation/ULTRIX, HP 9000, IBM RS/6000, and other major workstation platforms. To learn more about INGRES/Windows 4GL, call 1-800-4-INGRES.

Ingres

In December, 1990, Ingres Corporation was acquired by ASK. For more than ten years, Ingres has been a worldwide technology leader in database management systems. The family of Ingres products includes: the first intelligent relational database; the first Windows 4GL development toolset; gateways to the most popular non-Ingres systems; powerful desktop solutions; and global customer support. Ingres' reputation for technological excellence was most recently confirmed by Digital Review – the magazine's 1990 Editor's Choice, Best Database Management Software, and Best Database Tools awards went to Ingres – as did the Sun Observers' excellence award for Best Database Management System.

ASK
SOLUTIONS AT WORK

©1991 ASK Computer Systems, Inc., 2440 W. El Camino Real, Mountain View, CA 94039. ASK is a registered trademark of ASK Computer Systems, Inc. Ingres, Ingres/Windows 4GL and Ingres/Gateways are trademarks of Ingres Corporation. All other brands and trademarks are the property of their respective holders. GA636W

NEW AT COMDEX

Software applications packages

Geoworks released Geoworks Ensemble Version 1.2, an upgrade of its graphical user environment and applications software package.

The new version adds a spelling checker utility with a 100,000-word dictionary, a diagnostic utility that simplifies installation, screen savers and a library of document templates.

Version 1.2 costs $199.99.

Geoworks
2150 Shattuck Ave.
Berkeley, Calif. 94704
(415) 644-0883

Zylab Corp. announced availability of Zyindex for Windows, a text-retrieval software package.

Running under Microsoft Corp.'s Windows 3.0, Zyindex uses techniques such as prefix and suffix variables for fuzzy searches, topical searches, numeric searches and Boolean logic. It also has a thesaurus.

The first copy costs $395; extra copies for network nodes cost $195.

Zylab
100 Lexington Drive
Buffalo Grove, Ill. 60089
(708) 459-8000

Software utilities

Aristosoft, Inc. released More Windows 3.0, a screen-extending software utility for personal computers running Microsoft Corp.'s Windows 3.0.

Different modes with different resolutions are offered, including a 1,024- by 1,024-pixel full-page color display. More Windows 3.0 eliminates wait time involved in scrolling the Windows screen right and left.

The program costs $99.

Aristosoft
Suite 211
6920 Koll Center Pkwy.
Pleasanton, Calif. 94566
(415) 426-5355

Data storage

Ten X Technology, Inc. announced the Optixchange 940, a multifunction optical storage subsystem.

The product supports both write-once read-many (WORM) and rewritable storage in a single drive. It can be used with both DOS and Unix systems, and it operates with standard operating system commands, according to the firm.

Storage capacity is 1G byte for rewritable media and 940M bytes for WORM media.

The subsystem costs $5,495.

Ten X Technology
Suite 3200, Building 3
4807 Spicewood Springs Road
Austin, Texas 78759
(512) 346-8360

CMS Enhancements, Inc. announced 80M- and 120M-byte internal hard drives for IBM Personal System/1 personal computers.

Average access time for both drives is 19 msec. The drives install directly behind the PS/1 faceplate. Vertisoft Systems, Inc.'s Doubledisk data compression software is included to further increase storage capacity.

The 80M-byte model is priced at $649; the 120M-byte model costs $849.

CMS Enhancements
2722 Michelson Drive
Irvine, Calif. 92715
(714) 222-6000

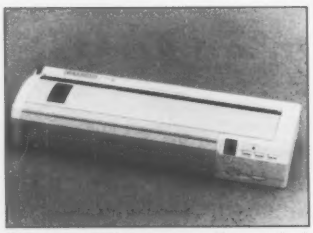
Peripherals

Intel Corp. demonstrated its Matched Memory add-in boards for the Hewlett-Packard Co. Laserjet printer series.

Versions are available with 1M byte and 2M bytes of memory; both are expandable to 4M bytes of total memory using standard dynamic random-access memory chips, allowing Laserjet models to handle graphics-intensive document printing.

The 1M-byte version costs $195; the 2M-byte board is priced at $295.

Intel
CO3-7
5200 N.E. Elam Young Pkwy.
Hillsboro, Ore. 97124



Citizen's *PN48 laser-quality notebook printer includes a Nicad battery*

(503) 629-7354

Citizen America Corp. demonstrated the PN48 Notebook Printer, a laser-quality printer weighing about two pounds.

The PN48 measures 3½ by 11½ by 2 in. and prints 80 char./sec. It handles letterhead, labels, envelopes and transparencies. A half-pound rechargeable battery is included. The firm also offers 24-hour express service. The PN48 costs $549.

Citizen America
Suite 600
2450 Broadway
Santa Monica, Calif. 90404
(213) 453-0614

Systems

Acer America Corp. introduced the Acerframe 3000MP, an Extended Industry Standard Architecture-based symmetric multiprocessor system for client/server environments.

The entry-level model includes one 33-MHz Intel Corp. I486 processor; three additional processors, including 50-MHz I486 chips upon availability, may be added. Up to 128 concurrent users can be supported.

Features include an on-board cache, a disk array subsystem and a programmable performance display.

The base configuration costs approximately $15,000.

Acer America
301 Charcot Ave.
San Jose, Calif. 95131
(408) 922-0333

When you compare cooperative processing development tools, MOZART® is music to your ears.

If you like the sound of an easy, affordable way to give a PC-style interface to your host application users, MOZART will strike the right chord.

Why? Because without changing a single line of IBM or other host code, MOZART lets you add a workstation-based CUA compliant GUI *and* local user assistance.

The secret to our success is the MOZART Composer development system, an integrated CASE-like tool with the same GUI ease-of-use as the applications you'll build.

You'll also love MOZART's high-level, object-oriented language with its automated operations that require 80% less code than similar development products.

And unlike Easel, with MOZART you'll get the big jobs done in less time and have a single application that runs on your DOS, Windows and OS/2* workstations.

So call Mozart today for your FREE Demonstration Disk at 415-340-1588, fax 415-340-1648.

And let's compare notes.

Mozart

Mozart Systems Corporation
1350 Bayshore Highway
Suite 630
Burlingame, CA 94010
415-340-1588, fax 415-340-1648

Microsoft Windows

IBM

*To be released Q3 '91. MOZART is a trademark of Mozart Systems Corporation. All other trademarks are trademarks of their respective holders. ©1991.

COMMENTARY

Elisabeth Horwitt

What kind of race is this?

European carriers would have us believe they are racing against time to provide the network quality, pricing and advanced services that increasingly globalized businesses are demanding in order to take advantage of the open European market of 1992.

When you look more closely at what is actually going on, however, it becomes clear that one group of Postal Telephone and Telegraph (PTT) authorities — in France, Belgium and the UK — is consistently charging ahead, while others are "racing" at a much slower pace.

To take one example: Next week, a group of Fortune 500 telecom and IS managers will meet at the International Communications Association show to come up with suggestions as to how Belgium's PTT carrier, can meet the needs of its high-volume customers through volume discounts and other deals.

From all accounts, the carrier should be amenable. It already offers some of the lowest international connections to the U.S. from Europe as part of its aggressive strategy to attract more global business traffic.

On the other hand, Fortune 500 companies have gotten little satisfaction from similar collective bargaining maneuvers tried on other European PTTs, our roundtable source reports. We do hear rumors that PTTs such as Spain's Telefonica are, indeed, cutting special deals with large customers.

What the carriers may feel less happy about is agreeing to such deals in a structured framework and in a more open forum, which puts them on the line to offer such deals to volume customers in general.

Another area where the PTTs are proceeding at very different paces is in their implementation of various initiatives by the European Council of Ministers and other pan-European bodies that are working to harmonize the European telecommunications environment and open it up to competition.

One such initiative is the Conference on European Postal and Telecommunications

Continued on page 68

Apple networks to take cautious upgrade path

Users say they'll wait out System 7.0 glitches

BY JIM NASH
CW STAFF

Despite assurances from Apple Computer, Inc., network administrators say they are proceeding cautiously with upgrades to Apple's new System 7.0 operating system.

Several managers said they were taking extra precautions in upgrading their networks to System 7.0. Like other administrators, Brenda Horn, network computing specialist at Arco Alaska, Inc. in Anchorage, Alaska, said she expected some problems with System 7.0, just as she would with any major software upgrade.

Another manager, Dave Ballowe, senior systems analyst at the University of Colorado at Boulder, said he foresaw a period of problems but is patiently waiting them out.

"We've been limping along this far with Apple's networks. We're taking a fairly conservative approach to the upgrade," Ballowe said.

However, Horn said, "we were definitely disappointed" with reports that System 7.0 was working poorly with Ethernet adapter cards not registered with Apple and some of Apple's own applications, such as Appleshare Version 2.0 and MacTCP.

Arco Alaska is watching System 7.0 with a critical eye as its tests progress, Horn said. She added that if too many problems crop up, she may decide not to implement it.

That decision, she said, would not bode well for Apple purchases in the future. "There are a lot of other good, competitive products that outperform and outprice [Apple]," she noted.

Apple has said that while System 7.0 is not compatible with Appleshare servers, the operating system will reside on the servers. The servers will not take advantage of the new features and performance perks built into System 7.0.

A spokeswoman for Cupertino, Calif.-based Apple said she was unaware of major problems with any other Apple networking software.

In fact, she said, System 7.0 is compatible with the latest version of "most of the 4,000-plus applications" that work with System 6.0. Nonetheless, Horn said, Arco will spend the next few months testing the new operating system against all in-house and commercial software used on-site with System 7.0.

Out of proportion

Problems with both the software and the Ethernet cards have been blown out of proportion, according to Greg Stasko, a senior systems engineer at Apple in Nashville.

The card makers that have designed their own drivers independent of Apple may not have designed for System 7.0, posing a compatibility problem, Stasko said. It is only a matter of time before both application and card makers update their programming to work with the new iteration, he added.

Paul Derby, director of IS at Control Data Corp. in Minneapolis, said he has had a System 7.0 beta-test product running for six months in a test lab with few problems. Compatibility problems have been minor, Derby said, and they should be worked out by most vendors this year.

That is not comforting for some managers, however. Ballowe's concern focuses on MacTCP. Transmission Control Protocol/Internet Protocol "is the basis of a lot of our communications across campus," he said.

Stasko admitted there was "a little bit of cleaning up to do with MacTCP, but users can work around it."

Other concerns

Other users were less worried with the fact that there were problems rather than with the perceived nonchalance of third-party software vendors.

Dirk Warschewski, a computer consultant at Colgate-Palmolive Co.'s technology center in Piscataway, N.J., said it is as if some vendors are saying suddenly: "Oh, look. We're not compatible. Let's do something."

Specifically, he cited Apple documentation, warning network users that System 7.0 will not work with 3Com Corp.'s 3+Share Version 1.6 network operating system and only with Version 1.7.

Warschewski said he was unaware of the existence of Version 1.7.

Growth of networks nurtured at EPA

ON SITE

BY JOANIE M. WEXLER
CW STAFF

Federal initiatives to clean up the environment and implement communications standards among government agencies will render 1991 a record year for U.S. Environmental Protection Agency (EPA) network revamps, according to the EPA's telecommunications chief.

David A. Bittenbender heads the EPA's telecommunications branch at its national data processing center in Research Triangle Park, N.C. He is directing a network metamorphosis aimed at accommodating federal environmental mandates such as clean-up projects under way in the Great Lakes and Chesapeake Bay. He is doing so within the boundaries of the 10-month-old Government Open Systems Interconnect Profile (GOSIP).

GOSIP kicked in last August, requiring all federal information processing procurements to include the capability to communicate using Open Systems Interconnect (OSI) protocols. GOSIP's aim is to ensure that all federal government equipment is ultimately interoperable.

"My marching orders are to provide seamless individual access to all of our processing power no matter where it is," Bittenbender said. One way he is filling the bill is with 12,000 Token Ring local-area network nodes linked by fiber backbones.

"We're shifting mainframe applications to LANs because of the diversity of what people are doing and because it's cheaper to add [computing power] to LANs," he explained. In addition, he is scouting out OSI X.400-based worldwide electronic mail systems, about 600 Unix workstations to run geographical information systems software and two supercomputers that will all ultimately hook into the worldwide network.

Currently, the agency's intersite data traffic is switched over the BT Tymnet, Inc. X.25 public packet-switching network. However, GOSIP precludes the renegotiation of that contract, requiring the agency to turn to dedicated lines sold under the General Service Administration's Federal Telecommunications System 2000 telephone services contract with AT&T and U.S. Sprint Communications Co.

Doug Van de Zande

Bittenbender *is directing a network overhaul to better handle the EPA's charge*

EPA computers interconnect among 10 regional offices to the 50 state capitals to partners in foreign countries and to the "floors upon floors" of IBM 3090 mainframes in the Research Triangle Park facility.

The workstations and supercomputers slated to join the processing resources will help the agency and its international cohorts determine pollutants and measure the effects of

To page 62

The experts say companies like yours will spend $240 billion on client-server computing.

Maybe you should start by spending a few minutes.

It is not a fad, or a vision of the future.

Client-server computing is real.

It's the fastest growing form of business computing since the PC.* And its rewards are tempting: Tremendous power for the dollar. Longer hardware lifecycles. Lower training costs. Less maintenance. Faster time-to-market. Better workgroup productivity.

So what exactly is client-server computing?

Ideally, it combines a PC's ease-of-use with the computing power of far larger systems. It lets people locate information on computers throughout the company — without having to know where to look, or how to get there. And it inspires workgroups to collaborate in entirely new ways.

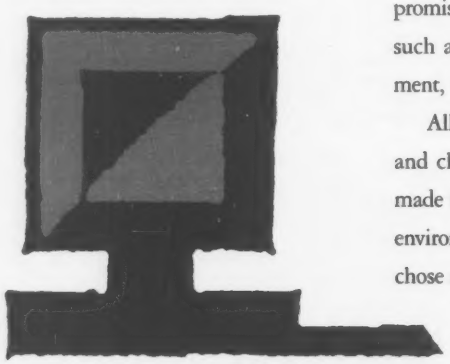
These ideals are not just Sun's. They're shared by every vendor of client-server computing.

What makes Sun different is how we accomplish them:

1) We put the focus of computing power wherever it can do you the most good — on the desktop, on the server, or split between the two.

2) We build everything into our desktop workstations that's needed for true client-server computing (RISC processing, multitasking, Ethernet, e-mail, audio, a graphical user interface, and plenty of memory and storage).

3) We give you a simple, consistent way to work within applications, access files, print, send mail, and manage network resources.



4) We offload processing from host computers to servers and workstations — your system can grow without limits, and in less costly increments.

5) We integrate all of your company's computers, so you can draw upon the data, applications, and processing power of every computing resource on the network.

That's what we do.

Now here's how we did it.

The luxury of nothing.

Nine years ago, when Sun began to explore client-server computing, we had a huge advantage over other computer companies.

We had no proprietary technology to protect.

Our engineers were free to design a total client-server environment. An environment that would, over time, embrace promising new concepts in computing, such as RISC processing, object management, and digital imaging.

All those years we were free to pick and choose only those technologies that made the most sense in a client-server environment. And when we did choose, we chose only one:

One operating system. One hardware platform. One networking system. One graphical interface.

That way, Sun was able to devote itself to perfecting a single, integrated client-server approach.

Which leads us to another advantage Sun had in its favor:

By starting out with a completely open mind, we ended up with completely open technology.

Open to anything.

From the beginning, we were determined that a Sun system should include the hardware, networks, and databases you already use.

*Independent analysts Alex. Brown & Sons estimate that commercial and technical businesses worldwide will invest $240 billion or more this decade in the desktop computers and servers that comprise client-server technology.

Today, every Sun workstation and server is powered by the SPARC® microprocessor, running the UNIX® operating system, accessible by the OPEN LOOK® graphical user interface, and linked together in the ONC™ networking environment.

Each of these technologies was designed on open industry standards; or, where no existing standards were to be found, we made ours available to the rest of the computing world.

Consequently, Sun client-server systems can give users uncomplicated access to all of your existing computers — even those running proprietary operating systems such as Ultrix, AIX, Xenix, DOS, OS/2, VMS, MVS, VM, and Macintosh.

Still, we weren't satisfied just to make our systems compatible with your equipment.

We also wanted them to be compatible with your people.

What you don't see is what you get.

Long ago, we asked ourselves:

Could people exploit the full power of UNIX, without seeing strange messages like */dev/fd Øa on/mnt: Invalid argument?*

Could a systems administrator manage an integrated, multivendor network, without seeing its underlying complexities?

Could a software developer design around a graphical user interface, without seeing a line of its code?

The answers are yes, yes, and yes.

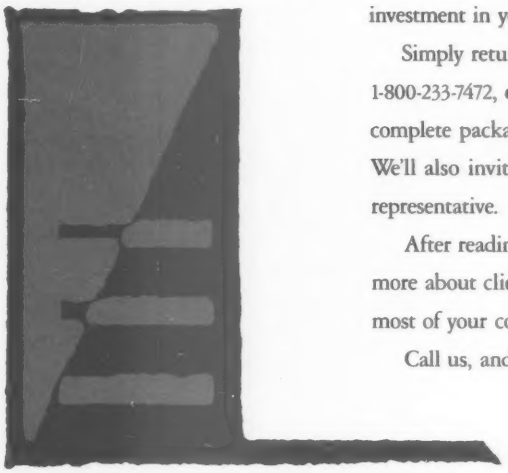
We've made client-server computing simple for users by giving them a graphical interface that's as intuitive as Macintosh or Windows 3.0. Nearly 2,500 software applications run on Sun systems including Lotus® 1-2-3® and WordPerfect.®

We've made system administration simpler with SunNet™ Manager. It's a powerful set of tools that actually uses the network to manage itself.

We've made life simpler for software developers, too. With more than 400 Sun and third-party CASE tools.

Is it really worth it?

The *Wall Street Journal*, Mitsubishi Bank, New Zealand Inland Revenue, Northwest Airlines, Xerox, Shell Oil, NYNEX, and hundreds of other respected businesses around the world are using Sun systems today. This is what they report:



We get more computing for the money. Companies find that a network of Sun servers and workstations accomplishes more work in less time than the costlier host systems they had previously used.

We're cutting costs and raising profits. For example, a Canadian insurance company's Sun system reduced overhead expenses by 55%, and boosted profits by 30%.

We not only protected our investment, we improved it. Existing host systems and PCs can be put to more efficient use as network servers and clients. Offload some of a mainframe's tasks to other servers, and you could even prolong its life expectancy.

We're no vendor's prisoner. The open technologies of SPARC, UNIX, OPEN LOOK, and ONC give companies the freedom to choose among vendors for the price and performance that suits their needs.

The next investment is ours.

As much as we appreciate the time you've just invested with us, the fact is there's much more to know about client-server computing.

So now we'd like to make a small investment in you.

Simply return this coupon, or call 1-800-233-7472, ext. 464. We'll send you a complete package of useful information. We'll also invite you to meet with a Sun representative.

After reading this ad, you already know more about client-server computing than most of your competitors.

Call us, and we'll tell you the rest.

Tell me more.

- ❑ Send me your client-server overview.
- ❑ Tell me about Sun workstations.
- ❑ Tell me about Sun servers.
- ❑ Tell me about Sun networking.
- ❑ Call me for an appointment.

Name _____

Function/Title _____

Company _____

Address _____

_____

Telephone _____

Please mail this coupon to:
Sun Microsystems, Attn: Corporate Marketing
PAL1-507, 2550 Garcia Avenue, Mountain View, CA 94043

sun microsystems

The purest form of client-server computing.™

464

©1991 Sun Microsystems, Inc. The Sun Logo is a registered trademark of Sun Microsystems, Inc. Sun, DeskSet, ONC, SunNet, and "The purest form of client-server computing" are trademarks of Sun Microsystems, Inc.
UNIX and OPEN LOOK are registered trademarks of UNIX System Laboratories, Inc. SPARC is a registered trademark SPARC International, Inc. Products bearing SPARC trademarks are based on an architecture developed by Sun Microsystems, Inc.
All other products or services mentioned are identified by the trademarks, service marks, or product names as designated by the companies who market those products. Inquiries concerning such trademarks should be made directly to those companies.

IBM to resell second DEC connectivity tool

BY ELISABETH HORWITT
CW STAFF

WILLIAMSVILLE, Vt. — Fel Computing's Lanlink-Decnet software will be the second Digital Equipment Corp. connectivity product that can be bought directly from IBM, Fel announced recently.

Fel's package runs on a dedicated personal computer that is equipped with either two Ethernet boards or an IBM Token Ring and an Ethernet board. The resulting gateway can then connect workstations on either Ethernet or Token Ring to systems on a Decnet/Ethernet local-area network. Workstations running software from IBM, Banyan Systems, Inc. or Novell, Inc. can access Decnet servers and other systems that comply with DEC's Local Area Transport protocol.

Fel's gateway software runs on a DOS-based PC or IBM Personal System/2. It is said to support up to 100 simultaneous sessions. A five-user link kit is priced at $1,495.

IBM also resells Interlink Computer Sciences, Inc.'s Software Network Solution SNA Gateway, a family of software products that links IBM MVS hosts with Decnet for a range of purposes, according to Interlink spokesman Don Parkman.

The base product provides file transfer, terminal emulation and security. One optional module allows IBM's Netview to manage Decnet installations, a second module supports program-to-program communications between IBM and DEC systems, and a third allows DEC systems to be backed up on tape drives attached to an IBM mainframe.

Interlink, which is based in Fremont, Calif., entered an agreement last July under which its gateways are sold directly by IBM's sales force, Parkman said.

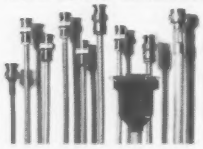
"Before July of last year, we had a marketing arrangement with IBM in which we would go into accounts as a team; they'd refer us," he added.

Jump to a higher-performance network while keeping your budget firmly on the ground.

Network Systems now combines high network performance, standards, and media independence with very affordable prices.

With our new 6000 Series RISC-based bridge-routers, more people can hop onto the same network and share information and resources, no matter what or where their home LAN is.

Network managers get a solid foundation for building networks—with connections from Cray and IBM channels to Ethernet to T3 to FDDI.



And the people who sign the checks get some of the best internetworking price-performance in the business.

Give everyone on your network a performance boost without spending lots of money. Call us at 1-800-338-0122.

Network Systems.

©1991 Network Systems Corporation

EPA

CONTINUED FROM PAGE 59

remedial action. Geographical information systems — which currently run on about 100 Sun Microsystems, Inc. workstations — "display tabular data boiled down into static, colorful maps," Bittenbender explained. "Rather than having to wade through volumes of statistical data, you have one color picture of all the stats to trace pollutants back through streams, see their concentration and find out where the problem is coming from."

The geographical information systems could eventually link to the two supercomputers, which will perform the massive calculations necessary to put the static information into three-dimensional motion for complex modeling and measurement. One example of the supercomputers' duties, Bittenbender said, would be to predict the dispersion characteristics of 100 pounds of a pollutant on a body of water constantly in motion. Currently, the function is performed at the North Carolina Supercomputer Center.

Allowing global workers common access to these resources will allow the EPA to follow through on President Bush's agreement with several foreign nations to team up on environmental projects, Bittenbender said. "We communicate electronically with about 100 foreign countries today," which means the X.400 OSI standard for E-mail is among the top items on EPA equipment checklists, Bittenbender said.

ONE EXAMPLE OF the supercomputers' duties, Bittenbender said, would be to predict the dispersion characteristics of 100 pounds of a pollutant on a body of water constantly in motion.

Internally, the EPA runs Digital Equipment Corp.'s X.400-compliant All-in-1, which can link to other E-mail systems through DEC's VAX Message Router X.400 Gateway.

The agency runs 190 Novell, Inc. Netware servers in addition to some DEC Decnet protocols in the research and development area over the Token Ring platform. One point of concern with the widespread Netware installation is that Novell's announcement in February of Netware v3.11 — which supports both Transmission Control Protocol/Internet Protocol and OSI stacks — was functionally good news but bad news in terms of price.

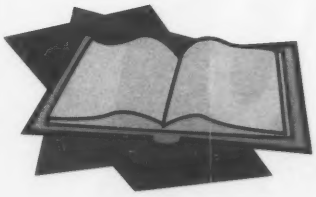
Because many of the agency's LANs run Netware 286, for which there is no upgrade price break, it would cost the agency about $1 million to move to v3.11, Bittenbender said. He said he envisioned price increases of 300% to 400% with v3.11, and he is considering the higher cost of replacing all of his Netware systems with IBM's OS/2 LAN Server.

"However, I've heard that there is high overhead with source route bridging," he said. Source route bridging is IBM's scheme for internetworking Token Ring LANs. "I'm really open to any LAN solution at this point."

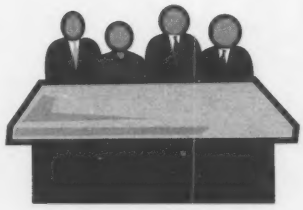
UNIX DATABASE

Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

Informix.



IDC Study on UNIX OLTP
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.



About the TPC
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, *every one* of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

The Number 1 Choice for UNIX OLTP

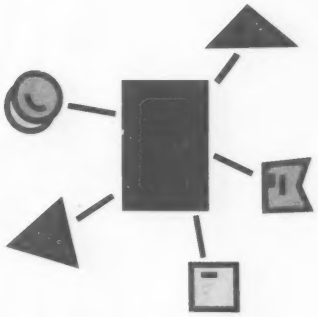
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at *more than twice as many multi-user UNIX sites* as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

A Decade of Innovation

Informix has been a UNIX RDBMS technology leader for over 10 years. Continuous innovation has resulted in advanced application development languages, distributed client/server computing, gateways to other computing environments, and multimedia flexibility you can take advantage of today.

Find Out More

We'd like to send you benchmark specifics—and information about how Informix products can meet your data management needs.
Call us toll free: **1-800-688-IFMX, ext.2.**



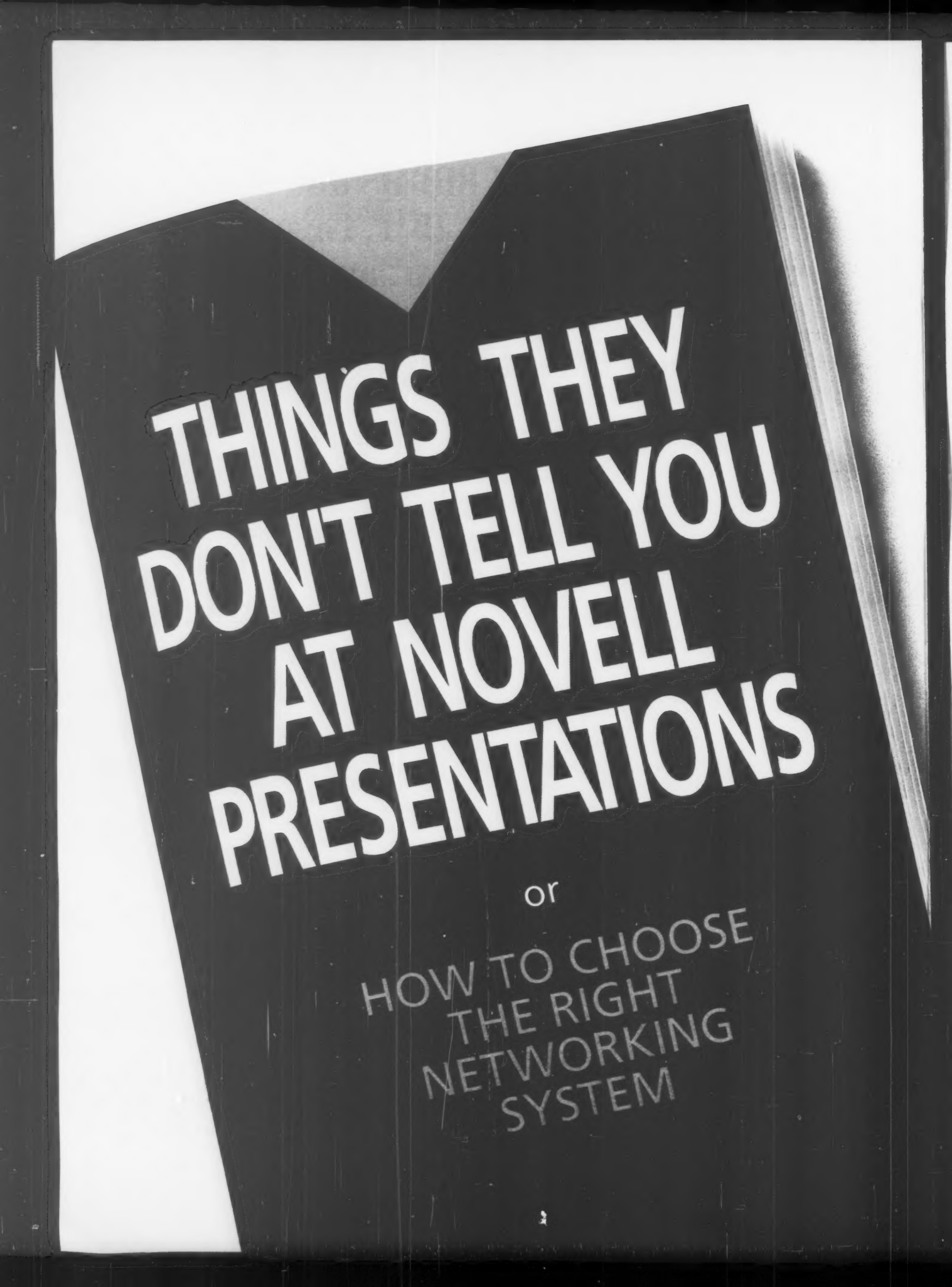
INFORMIX-OnLine Database Server
OnLine was built for speed...and that's what it delivers. Developed entirely on UNIX, the OnLine server turns in optimum performance on every popular UNIX architecture—including symmetric multiprocessors, RISC, and CISC.

TP1 vs. TPC Benchmarks
The TP1 benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TP1, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similiar to a batch test—focuses on database throughput.

INFORMIX®

Data management for open systems.

© Copyright 1991, Informix Software, Inc. Informix is a registered trademark of Informix Software, Inc. All other names indicated by ® or ™ are registered trademarks or trademarks of their respective manufacturer.


THINGS THEY DON'T TELL YOU AT NOVELL PRESENTATIONS
or
HOW TO CHOOSE THE RIGHT NETWORKING SYSTEM

There are things about buying a networking system that most people don't know when they buy one.

So we've written a booklet, "Things they don't tell you at Novell presentations."

You'll find information no one else will give you. Information about technology unique to Banyan and advantageous to you.

Distributed Architecture.
Why Banyan can offer you almost effortless growth. And the others can't.

The Man Trap.
Why competitive network operating systems require more and more LAN administrators. And Banyan doesn't.

Hidden Costs.
This part will make your hair stand on end.

Banyan has been refining its VINES® networking products for years. Our solutions are stronger, broader, and more cost-effective than anything else out there. So,

- if you're buying a networking system for the first time...
- if you're expanding...
- if you're wondering why you need so many people to manage the system you have now...
- if you're considering only Novell...

...Please call the toll-free number below for immediate delivery of your free booklet or to arrange a demonstration.

BANYAN®

Networking. Without Limits.™

Please send this coupon to: CW
BANYAN, 120 Flanders Road, Westboro, MA 01581

NAME

TITLE

COMPANY

ADDRESS

CITY STATE ZIP

CALL 1-800-828-2404
In Massachusetts: 508-836-2828

NETWORK SHORTS

Teleos, AT&T join forces

Teleos Communications, Inc. said last week that it has teamed up with **AT&T** to stimulate sales of both Teleos' Integrated Services Digital Network (ISDN) equipment and AT&T ISDN-based services. Teleos said the firms' products and services will be marketed by both firms' sales forces in the domestic U.S. Teleos devices allow users to access an ISDN communications line, and AT&T will reportedly be displaying Teleos' 1.5M bit/sec. Primary Rate Interface equipment — which links a user site and an AT&T Primary Rate Interface network — at its customer presentation sites around the country.

3Com Corp. recently announced a network systems integrator program for existing 3Com resellers that are expanding their network adapter and hub sales to include router, bridge and terminal server products.

The **National Center for Manufacturing Science** (NCMS) has announced a partnership with **Allen-Bradley Co., Concord Communications, Inc.** and **General Motors Corp.** to promote enterprisewide factory networking. According to NCMS, the partnership will devote more than $1 million to the development of a next-generation broadband modem based on the IEEE 802.4 token-bus standard.

Enterprise networking vendor **Banyan Systems, Inc.** is breaking a new print advertising campaign today that compares its Virtual Networking System network trait for trait against **Novell, Inc.**'s Netware local-area network. The move represents a step toward what the industry has been nagging Banyan to do for years: get the word out about its technology advantages in constructing large networks. The brass-tacks language of the materials targets information services executives who read about Novell's walloping market share and are not necessarily tuned in to the technical subtleties that LAN administrators have picked up on.

Lotus Development Corp. has announced completion of the Soft-Switch Lotus Notes Gateway for its Notes groupware environment. It will allow Notes users to exchange mail with over 50 electronic mail systems already supported by **Soft-Switch, Inc.** That gateway "will provide the critical communications connection required to implement our distributed mail architecture," said Mark Polly, a senior end-user computing consultant at **Progressive Casualty Insurance Co.** in Cleveland. The gateway runs on a Notes server and can support an entire network of Notes servers. Slated for third-quarter availability, pricing for the gateway begins at $4,995.

Tool automates PC upgrades

Tangram's software benefits similar to IBM's Distribution Manager

BY ELISABETH HORWITT
CW STAFF

CARY, N.C. — Tangram Systems Corp. has produced a rival to IBM's Netview Distribution Manager, the software package that allows IBM mainframes to act as software distribution centers for personal computers.

An IBM MVS mainframe running Tangram's AM:PM software can automatically distribute software and data to, and collect data from, OS/2 and DOS workstations residing on a network, the software vendor said.

Tangram's communications software product, Arbiter, works in concert with AM:PM to provide a variety of ways for the mainframe and workstation to communicate.

A mainframe running the product can be programmed to automatically download software to an OS/2 system at a given time, Tangram said. The software uses the OS/2 background mode so that the workstation can continue to run other applications without interruption, according to Steve Kuekes, Tangram's vice president of product development.

DOS capabilities

The mainframe can download software to any DOS PC that is left running with the DOS command prompt on, Kuekes said. Thus, users can leave their PCs on at night and come back to updated software in the morning. If the updates must take place during work hours, the software can beep a user to get out of whatever task he is performing and return to the DOS command prompt, he added.

The software also provides the following features:

- Logging of both failed and successful attempts to distribute software to a given workstation.
- The ability to collect as well as distribute data. This is useful for production applications where, for example, the mainframe can be programmed to collect all of the data entered on PCs during the day, process the data and distribute back answers overnight, Kuekes said.
- The ability, via Arbiter, to take control of a PC from the host. The host can download software updates and then initiate a PC program to integrate them into the existing package instead of having to download the entire new software version into the PC, Kuekes said. IBM offers a similar utility.
- Interfaces to popular IBM mainframe-based security systems such as Computer Associates International, Inc.'s Top Secret and ACF2.

A security utility geared for automatic software distribution allows the mainframe to download a new password to each PC at the end of a transaction.

That new password is then used by the PC the next time it identifies itself to the mainframe as a recipient of a software update. This eliminates the need for users to store their passwords on the network, where they can easily be used by an unauthorized person, during unattended communications between the PC and mainframe, Kuekes said.

One feature that IBM provides and Tangram, so far, does not is an OS/2 version of the distribution system. IBM's Distribution Manager/2, scheduled to ship at the end of this month, is said to allow Netview Distribution Manager Release 3 running on a mainframe to distribute applications software and OS/2 operating systems software down to OS/2s running Distribution Manager Release 2.

Server functions

OS/2s running Distribution Manager can also act as servers that collect the software from the mainframe and then distribute it to OS/2 and DOS workstations over a LAN, IBM said. The recipient workstations must be running Distribution Manager Release 2 LAN Download Utility. An OS/2 server running Distribution Manager Release 2 can also act as a local software distributor without the mainframe connection, IBM said.

The next version of AM:PM, which will probably be out by year's end, will be able to download to OS/2 servers as intermediate points for LAN distribution, Kuekes said.

The initial version of AM:PM is due out by the end of this month. It will be offered as a feature of Arbiter, with prices ranging from $45,000 to $98,000 for Arbiter users.

First-time customers can buy Arbiter with the AM:PM feature for between $82,000 and $190,000, Tangram said.

FCC chairman urges less government regulation

Market forces will promote technological innovation in the industry, according to Sikes

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Testifying before a congressional panel recently, Federal Communications Commission Chairman Alfred C. Sikes urged the government to lighten the hand of regulation on the U.S. communications industry. He said his vision of the future of communications will be difficult to meet without changes to the federal regulatory infrastructure.

Speaking before a subcommittee of the Senate Committee on Commerce, Science and Transportation, Sikes said, "I think . . . that those of us in government who have important responsibilities for U.S. communications policy should place special emphasis on permitting the market to determine the best mix of communications facilities and providers.

"We should place special emphasis on ensuring an environment which is conducive to the maximum possible technological progress and innovation."

Sikes *is calling for lighter restrictions to promote innovation and progress*

Asked to describe his vision of the future, Sikes predicted a dramatic expansion of channel capacity and advances in transmission speeds enabled by digital transmission, fiber optics, computer technology and "the seemingly limitless talent of America's software industry."

Opening new doors

Those technologies will make possible such things as electronic libraries serving rural areas and powerful new medical services based on computers, radiation treatment and diagnostic equipment linked by fiber-optic and satellite communications. In addition, Sikes predicted there will be a multimedia "seamless network of networks" combining telephone, cable and mobile networks.

Sikes referred to investments of public funds by Japan, Germany and France in specific new communications technologies, but he urged a more laissez-faire approach for the U.S.

"No government will have the optimal recipe [of technologies and vendors], and none is well-equipped to serve as the industry's master chef. The choice we need to make is to rely on private enterprise and competition to produce the best possible mix," Sikes said.

"The 'network of networks' is a very interesting concept," said Sen. Ted Stevens (R-Alaska). "Can we get there with existing regulation?"

"No, I think there have to be changes. There are a series of laws and arrangements that have to be revisited," Sikes replied without mentioning any specifics.

According to Sikes, current regulations are based on a simpler world of single-use technologies and are not well-suited for modern, hybrid "high-capacity technologies driven by computers."

> THE CHOICE WE need to make is to rely on private enterprise and competition to produce the best possible mix."
>
> ALFRED C. SIKES
> FCC

"We can't get from here to there under the Consent Decree," Stevens said, referring to the terms of the AT&T breakup, which still largely constrain AT&T and the Bell operating companies to traditional lines of business.

"I agree," Sikes said.

Sure It's Wireless But It's Not LXE

With LXE's New RF Terminal, You Don't Have To Use Both Hands.

Now you can fit an LXE RF Terminal with Laser Scanner in the palm of one hand. A full-featured terminal with 160-character display, modular scanner, and a large 61-character tactile keyboard...all integrated into one lightweight, compact RF unit.

It's LXE's new Integrated Scanning Terminal (IST), the first handheld terminal to incorporate your choice of specialized scanning heads. Simply choose the scanning module that matches your barcode requirements: Standard, Long Range or Advanced Long Range. It's your choice and it's modular. The Integrated Scanning Terminal is the latest addition to the new LXE 2200 terminal family.

No other company offers as many RF solutions and comprehensive customer support as LXE. You get more terminal options, more connectivity and more industrial experience. LXE *is* industrial strength wireless data communications. To learn more about our new 2285 IST, call an LXE Project Coordinator today at (404)447-4224.

LXE

Horwitt

CONTINUED FROM PAGE 59

accord signed two years ago by 19 member nations. The initiative calls for PTTs to make one-stop shopping agreements whereby one PTT can act as a liaison between users and other European PTTs.

Such agreements can benefit PTTs and users by taking a lot of the pain out of setting up pan-European networks. An increasing number of multinational companies are signing network outsourcing contracts with global value-added network vendors because they are tired of dealing with multiple PTTs, each with its own tariffs, regulations and bureaucracy.

Perhaps the most crucial of the recent European initiatives is the Open Network Provision proposed in December 1989 at the European Community's Council of Ministers meeting. The provision includes the following directives:

- Approval of telecommunications equipment in one country means approval for all 12. This initiative would make it a lot easier for foreign telecommunications equipment vendors to introduce products across Europe.

For the initiative to work, all European PTTs would have to support the same specifications for hooking customer premise equipment to their services. That is not presently the case, sources say. One source likened trans-European communications to taking a train across Europe: At one border, you may have to stop to convert your power source; at another, you may even have to change to a different set of tracks.

- While voice telephony services should remain monopolies of PTTs, data communications services, both circuit and packet-switched, should be progressively opened up to competition. The goal is regulated competition by Jan. 1, 1993.

European governments must play a role in the implementation of the above initiative, and indeed, some have. For example, France recently passed a law requiring France Telecom to provide other network service providers with equal access to its domestic network. The UK has relaxed restrictions against third parties who lease lines from the major UK carriers and resell the bandwidth to their customers.

However, Germany, Italy and Switzerland (which is not a member of the European Community) are much less open to competition. Pricing for international leased lines remains high in these countries, and it still takes longer than many telecom managers can tolerate to order a high-speed leased line. This is not surprising — the more competition is allowed, the more the PTT is pressured to upgrade its infrastructure.

To be fair, some PTTs have unique barriers to telecom modernization. Germany's Deutsche Bundespost, although one of the more monopolistic PTTs, is putting a lot of its energy and funding into the huge task of upgrading Eastern Germany's telecommunications infrastructure. Telefonica is moving to modernize, but it has a longer way to go than many PTTs because it started late.

The fact is, no one can "win" the race to open up and modernize Europe's communications environment — any more than Europe, the U.S. or Japan can beat the rest of the world at network service quality. When it comes to global business communications, as with global ecology, we must all pull together to win — or we'll all lose. Big.

Horwitt is a *Computerworld* senior editor, networking.

PC support for Quickmail

BY JIM NASH
CW STAFF

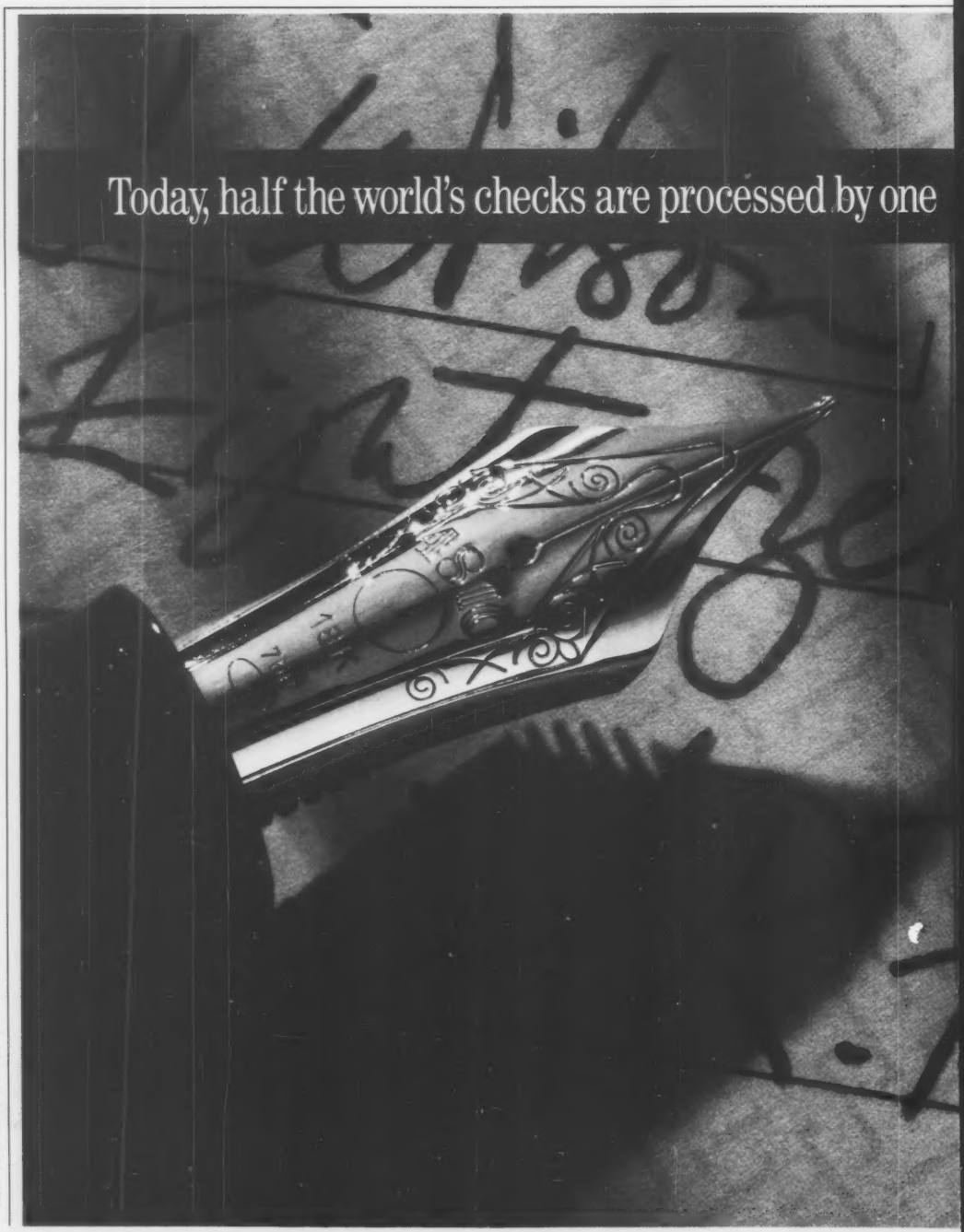
WEST DES MOINES, Iowa — CE Software, Inc. picked up support for most major personal computer platforms in the newest version of its Quickmail electronic mail application. CE announced last week that Quickmail Version 2.5 will transport E-mail on MS-DOS, Microsoft Corp.'s Windows, OS/2 and Apple Computer, Inc. networked machines.

However, one beta-test user said he was more impressed with the new efficiencies in Version 2.5. Mark Chalkley, an information systems officer at Signet Bank in Richmond, Va., said CE is now using a technique available in other PC and mainframe mail packages to conserve E-mail server memory by sending only "pointers" to mail recipients.

Only one message is created, Chalkley explained, but electronic pointers alert recipients to look at the message. Multiple users can view the message simultaneously. The new version is scheduled to ship in the second quarter of this year.

An Apple machine must be used as the mail server. Version 2.2 on workstations requires a Macintosh Plus running System 6.03 or higher. Although Version 2.2 on the server requires System 6.04 or higher on a Macintosh Plus with a hard drive, a Macintosh SE is recommended.

Version 2.5 requires a Macintosh Plus with 1M byte of memory or more running System 6.04 or higher, and a hard drive is recommended. On the server, Version 2.5 requires a Macintosh Plus with a hard drive running System 6.05 or higher. A Macintosh SE with at least 1M byte of memory is recommended.



Electronic conference system calls for new way of business

BY JOANIE M. WEXLER
CW STAFF

DALLAS — There is a big "if" attached to whether Videotelecom, Inc. will revolutionize the way people work with the whizbang electronic conferencing system it announced recently: Is the user community ready to completely rethink the way it does business?

The Austin, Texas-based vendor demonstrated an IBM Personal Computer AT-based system that enables geographically separated co-workers to manipulate data files in real time in multiple windows on their video monitors, view each other, chat and fax hard-copy materials all across one circuit.

"Like all technologies, the concept will probably take some time to become accepted intellectually," predicted Phil Evans, president of the International Communications Association (ICA). Videotelecom plans to demonstrate the system — dubbed Mediamax — at ICA's annual conference this week in Anaheim, Calif.

Mediamax will likely appeal first to the engineering community, which can better cost-justify the company's separate Digital Video Branch Exchange, necessary for multipoint electronic conferencing, Evans pointed out.

An eight-port switch costs $70,000; a 14-port switch costs $98,000. These price tags sit on top of the $35,000 to $85,000 price of the PC-based system that is required at each connected site.

"Technical applications depend more on collaborative work from resources in remote locations to solve problems," Evans said. "In the administrative area, I would think it would be some time before companies could justify such a system."

Price Craddock, telecommunications analyst at Hardee's Food Systems, Inc. in Rocky Mount, N.C., agreed. "I could conduct a multipoint conference over the [U.S. Sprint Communications Co.'s] Meeting Channel and wouldn't have to go out and buy that switching unit," he said. "I can buy a $40,000 [coder/decoder] and let Sprint do the switching.

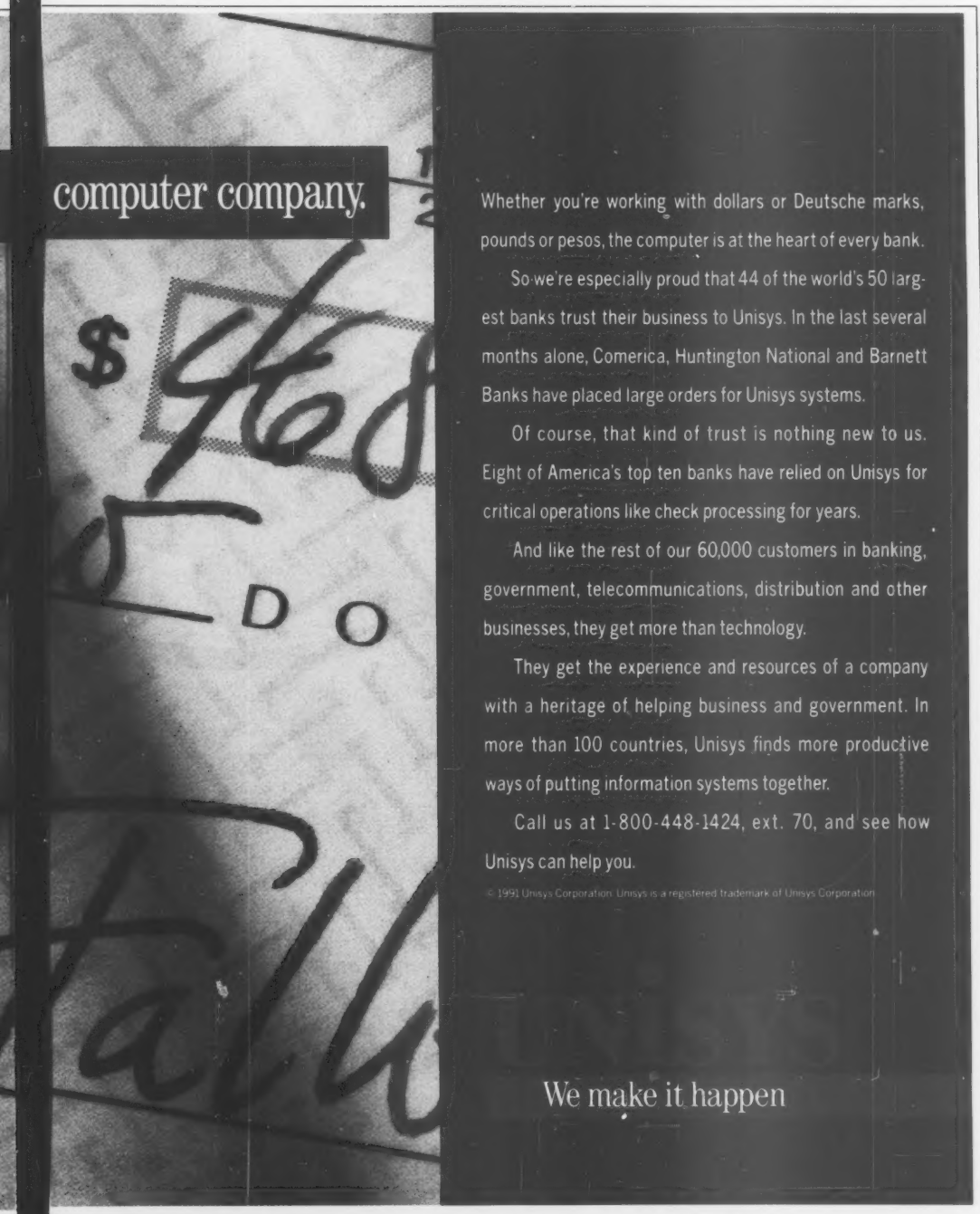
"I can't imagine any of our average videoconference users needing interactive data manipulation. How many people need that much capability at their fingertips? If you're living and breathing graphs and charts, maybe," Craddock added.

Videotelecom's system, based on an Intel Corp. 80386- or I486-based, 40M-byte PC, includes audio, video, fax and file exchange/manipulation capabilities along with an optional $4,000 record/replay feature. The option alerts co-workers across time zone barriers of a "media message" when they boot up their computers, allowing them to replay meetings and view the various versions of file revision.

"This is one videoconferencing vendor that has the right idea," commented Janet L. Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass. "With this system, you don't leave the meeting room with an action item. You design, draft proposals and sign off right there."

The integrated set of functions will work over a 56K bit/sec. channel, the vendor said, although 112K bit/sec. is recommended.

Existing Videotelecom Conference System 350 users can upgrade to the new architecture, which incorporates the newly ratified CCITT px64 standard for video compression, for $15,000.



NEW DEALS

AT&T to do Honeywell net

Honeywell, Inc. has selected **AT&T** to provide more than 200 company locations with interstate and international voice and data services. Minneapolis-based Honeywell said it expected the $20 million customized voice and data network would save the company $5 million per year.

AT&T also won a $30 million custom network contract from **Choice Hotels International** and its parent company, **Manor Care, Inc.**, for a network serving both its Washington, D.C., corporate headquarters and its hotels, nursing homes and other properties. The custom network deal with AT&T follows an agreement last year — valued at more than $90 million — for credit-card and operator assistance services.

MCI Communications Corp. said **General Electric Corp.** has signed a new, five-year agreement. The contract — which is of undisclosed value — covers a range of voice and data services, including 800, virtual private networking and private line services.

Why put your business on anything but

Choose a T-1 provider that isn't AT&T ACCUNET® T1.5 Service and you could watch your network take the plunge a lot more than you have to.

When it comes to fault-tolerance, no other core network even comes close to AT&T's. We've got the most digital miles, the most fiber loops and the most capable network of digital cross-connects. Which means more network protection options for you. So with us, if a circuit goes down, you won't have to watch your application go with it. We also have the strongest monitoring and maintenance capabilities, not to mention the considerable resources of Bell Labs.

For the ultimate in reliability, we offer a whole host of options that help you make the most of our network. Like design solutions that can give you greater physical diversity than even multi-vendor solutions. Or instant switching to a fully maintained back-up circuit in the event of trouble. You can also choose from the most extensive network management offerings of any vendor, including the capabilities to monitor your own network end-to-end, reconfigure around trouble and manage bandwidth requirements.

the world's most reliable network?

If we weren't so sure about the reliability of our ACCUNET T1.5 Service, we wouldn't offer the most generous money-back guarantee of any T-1 provider. We do.

Considering what's hanging on your network's performance, why not grab onto the carrier that can deliver like no one else?

Digital solutions that match your needs. Another AT&T advantage.

For more information about AT&T ACCUNET T1.5 Service, call your AT&T Account Executive or 1 800 247-1212, Ext. 374.

AT&T

The right choice.

Stratacom puts T3 on T1 unit

BY JOANIE M. WEXLER
CW STAFF

Fast-packet wide-area switching pioneer Stratacom, Inc. announced two T3 cards for its Integrated Packet Exchange (IPX) T1 multiplexer last week.

The move aims to tide over the Campbell, Calif., vendor's bandwidth-hungry customers while the firm constructs a standards-based architecture for a packet-oriented broadband switch.

"The bottom line is that this move by Stratacom gives the IPX a way to compete in providing T3 speeds today," said Rosemary Cochran, a principal at Vertical Systems Group, Inc. in Dedham, Mass. Other vendors offering T3 capability include Timeplex, Inc., Digital Link Corp., T3 Plus, Inc. and Network Equipment Technologies, Inc., she said.

Stratacom's first card, due out in the third quarter of this year, is an $18,750 circuit-switched interface that links IPXs and other equipment over dedicated circuits within T3's 45M bit/sec. bandwidth.

The second card, slated to ship in the second quarter of 1992, will be a CCITT-compliant cell-relay card that will afford T3 users the efficiencies of fast-packet switching. To date, the IPX's cell-relay scheme has been proprietary because the company's architecture preceded the formation of a standards body for the technology.

William R. Stensrud, Stratacom's vice president of marketing, said Stratacom customers have cited their initial uses of T3 as concentrating clusters of T1, private branch exchange, router and video traffic over the T3 channel into a long-distance carrier's central office. From there, individual T1s can be dispersed to a variety of carrier services.

Stensrud said T3 will probably not be widely deployed until at least 1993, when Stratacom intends to roll out a new broadband IPX architecture to accommodate such emerging high-speed technologies as Switched Multimegabit Data Service, Fiber Distributed Data Interface and Synchronous Optical Network. "We don't expect users to go from T1 to broadband speeds overnight," he said.

Future growth predicted

Vertical Systems Group has not been bullish on T3 for the short term but predicted the 1991 U.S. T3 market of $45 million to grow to $200 million by 1994. Williams Telecommunications Group and Compuserve, Inc. are initial testers of Stratacom's T3 components. Because carriers aggregate large quantities of data from many customer sites, they are likely to be early adopters of the higher speed technology, Cochran said.

Mike Innell, assistant vice president of information technology development at Manulife Financial in Toronto, is an IPX user who anticipates never needing T3 bandwidth. Innell said he bought his pair of IPXs "because it was the best technology for voice compression."

With Stratacom's first card — dubbed the MT3 — traffic between IPXs converts to circuit-switched mode. This means each data stream is dedicated to an assigned 64K bit/sec. circuit within the T1 channel. Circuit switching is less efficient than packet switching for data transfer because bandwidth can sit idle on one circuit between data bursts while another circuit gets backed up.

"Have You Seen What They Did With CA-IDMS?"

A new and improved CA-IDMS now offers you SQL, PC development, distributed processing and transparency software.

Thanks to Computer Associates, CA-IDMS has been substantially enhanced. And extended. And transformed into a comprehensive, relational, information management solution. The only solution that protects your investment with transparency software that allows you to run your VSAM, IMS, DL/I and TOTAL applications in a relational environment without any rewriting.

CA90s

And it offers CA's revolutionary, new Computing Architecture for the 90s which frees you from hardware dependencies and delivers all the distributed processing and portability you need. Call 1-800-645-3003 today to find out about a new and improved CA-IDMS that can help you just when you need it the most.

Today.

COMPUTER ASSOCIATES
Software superior by design

All trade names referenced are trademarks or registered trademarks of their respective companies.
©1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787

$22/hr. CICS, DB2, DL/1

CCD will develop your CICS, DB2, IMS DL/1, COBOL Applications @ $22/hour.

. On a Fixed Price or T&M Basis
. FREE Fixed-Price estimate on your upcoming projects

Call Cary Schorr, Marketing Director
TOLL FREE 1-800-328-6755

CCD ONLINE CCD Online Systems

Bethlehem Steel forges its DB2 administration with BMC Software.

Bethlehem Steel, one of the nation's leading steel producers, strives to improve productivity in an increasingly competitive market. When Bethlehem Steel started using DB2, they immediately began looking for DB2 administration tools.

For nine years Bethlehem Steel has relied on BMC Software for their IMS database and data communication needs. But to determine the best source for their DB2 needs, they developed a comprehensive evaluation process designed to stress DB2 products to their limits. Few of the products could handle the heat.

While other vendors made promises for increased functionality, BMC Software delivered comprehensive capabilities in MASTERMIND™ for DB2. With BMC, advanced features were already available.

Program manager, Nancy Friedel explained. "...the sophistication with which ALTER™ for DB2 was able to make multiple changes at one time and generate the worklist in the sequence of the proper creation of objects was far advanced compared to the other products we looked at."

The time savings led technical analyst Mike Best to say that the return-on-investment has been "tremendous."

The other MASTERMIND products also provide comprehensive capabilities for Bethlehem Steel.

CATALOG MANAGER for DB2 provides the many basic functions needed for using the DB2 catalog. This one product simplifies DB2 security management, generates object lists, takes actions against the objects in the lists and creates utility jobs.

DASD MANAGER for DB2 promotes planning and operation by offering comprehensive statistics, historical data for trend analysis, and triggers for setting up and acting upon user-defined thresholds.

Strengthen your DB2 administration with the leader

Find out how BMC Software can help you take charge and increase productivity. For more information on BMC's DB2, IMS or CICS products, or to begin a 30-Day-Plus Free Trial, send your request by fax to 713 242-6523 or call

1 800 841-2031

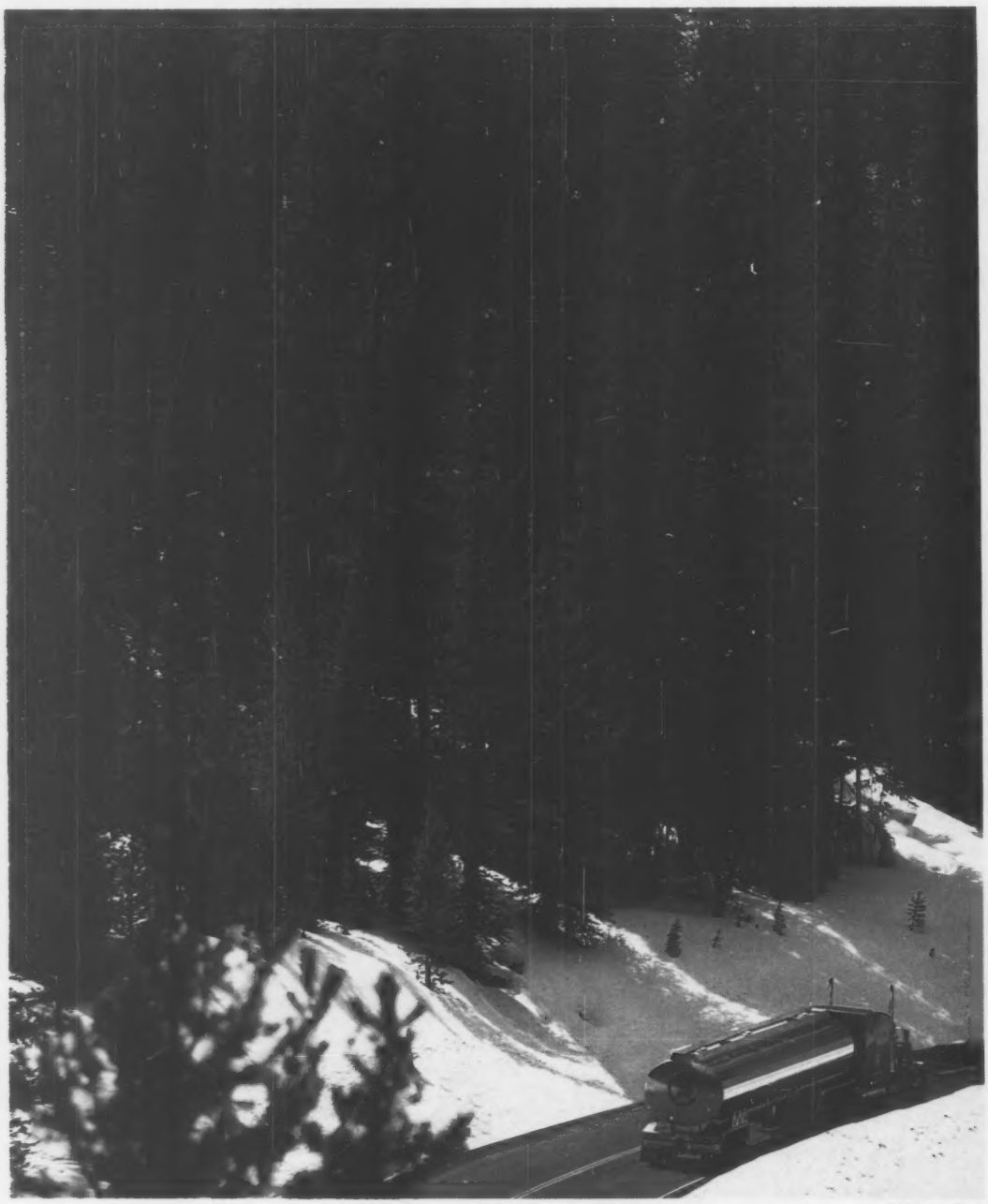
BMC SOFTWARE

Internationally, contact one of BMC's offices in:

Australia	Canada	Denmark	France	Germany	Italy	Japan	Spain	United Kingdom
(61)3 819 6733	800 841-2031	(4544 68 22 00	(33) 1 48 77 77 77	(49) 89 664060	(39) 2 581 03141	(81)3 3837 8651	(34) 1 639 30 62	(44)276 24622
FAX:(61) 3 819 6758	FAX:(713) 242-6523	FAX:(45) 44 68 33 00	FAX:(33) 1 48 77 01 17	FAX:(49) 89 6641047	FAX:(39) 2 58112208	FAX:(81)3 3837 8567	FAX:(34) 1 639 42 75	FAX:(44)276 41201

DB2 is a trademark of IBM Corp.
1991 BMC Software, Inc. All rights reserved

NETWARE HELPS RECOVER SOMETHING MORE



©1991 Novell Inc.

THIS COMPANY IMPORTANT THAN PROFITS.

Few things are as rugged or fragile as our environment. Which is why Chemical Waste Management is so serious about the responsible tracking and handling of industrial byproducts. Fortunately, Chem Waste has NetWare® at its disposal.

According to Mike Hansen, director of information systems, "Our waste tracking system is often used and administered by people with limited computing experience in some geographically isolated regions. So our network must be simple to install, operate and support. Above all, it's got to be reliable," continues Hansen.

So it's only logical that Chemical Waste Management chose NetWare, the only PC-based network operating system that's in its eighth generation.

However, ease of use, reliability and the industry's tightest security weren't the only factors that made NetWare the clear choice. "Several of our sites were already running an E-mail package and network from another vendor. NetWare was the only product that allowed us to protect our previous investment," recalls Hansen.

Fact is, NetWare is compatible with more applications, computing environments and hardware than any other network operating system.

The end result, according to Hansen, is a competitive advantage. "Running our custom application on NetWare allows us to implement a business-wide, real-time waste inventory tracking system. It provides better customer service and contributes to cost-effective operations."

All of which helps NetWare reduce the environmental and financial impact of responsible waste management.

So call 1-800-LANKIND for your NetWare Buyer's Guide. And learn why this company also insists on a stable environment for its network.

The Past, Present, and Future of Network Computing.

NEW PRODUCTS

Micro-to-host

Tektronix, Inc. has designed the Tekxpress XP29P, a terminal for development of two- and three-dimensional graphics applications supporting the Programmer's Hierarchical Interactive Graphics System (PHIGS) standard under X Window System.

The Tekxpress is the first PHIGS Extension to X protocol terminal available. The terminal includes enhancements to PHIGS such as Gouraud shading, double buffering and hidden-line/hidden-surface removal via dithering and Z-buffering.

A 0.28mm-dot pitch monitor and 7M bytes of memory are standard on Tekxpress models.

Pricing starts at $6,995.

Tektronix
Wilsonville Industrial Park
Wilsonville, Ore. 97070
(503) 682-3411

Firesign Software, Inc. has announced 3270IX, a software package offering users concurrent access to IBM mainframe and AIX-based workstation applications.

The product is the first 3270 emulator compliant with Systems Application Architecture guidelines, according to the company. It is also compatible with Synchronous Data Link Control, Token Ring, Ethernet and X.25 standards, Firesign reported.

Pricing for 3270IX starts at $795.

Firesign Software
82 Whipstick Road
Ridgefield, Conn. 06877
(203) 431-0213

Multi-Tech Systems, Inc. has announced a series of IBM 5250 emulator products for IBM midrange computers.

The 5250 emulator software packages are available for connecting personal computers to IBM System/36s or Application System/400s.

The local and remote versions each cost $250. Twin-axial add-in PC half cards providing for physical connection to the midrange systems are priced at $645.

The company also announced products allowing local and remote PCs to function as gateways connecting local-area networks to IBM midrange systems. Each version costs $1,350.

Multi-Tech Systems
2205 Woodale Drive
Mounds View, Minn. 55112
(612) 785-3500

Local-area networking hardware

Trilan Systems Corp. has introduced a system for integrating real-time data, voice and video transmission over a single 16M bit/sec. Token Ring network cable.

The system, Trilan, consists of add-in cards for personal computer nodes as well as gateways for interfacing with wide-area networks. Intelligent Node Coupling Units link nodes on the local-area network and automatically detect system failures.

The technology is compliant with industry communications standards, according to the company.

A voice transmission card costs from $2,000 to $2,500. Video cards cost approximately $7,500. WAN gateways are priced at approximately $2,000 per card.

Trilan Systems
2900 Dukane Drive
St. Charles, Ill. 60174
(708) 584-2300

Milan Technology Corp. has introduced a micro-size media converter for Ethernet local-area networks.

Attaching an Alternet adapter at each node allows users to switch networks with coaxial LAN cabling to 10Base-T unshielded twisted-pair topology, the company said. Alternet measures 3½ by 4½ inches and uses an external power adapter.

The product costs $329. A three-year warranty is included.

Milan Technology
67 E. Evelyn Ave., Suite 3
Mountain View, Calif. 94041
(415) 968-9000

Local-area networking software

A product that paves the way for concurrent Open Systems Interconnect (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) communications capability on a single personal computer has been announced by FTP Software, Inc. and Concord Communications, Inc.

Current users of the OSI Manufacturing Automation Protocol can access files and data on Ethernet local-area networks running TCP/IP through Concord's Mapware controllers and FTP Software's PC/TCP software.

Mapware controllers contain a full OSI communications protocol stack and multiple interfaces; they also include a Network Device Interface Specification (NDIS) that communicates with the PC/TCP software.

Concord's OSI software interface, including the NDIS, costs $750 per site. It is available for the company's Series 1210, 1215 and 1410 controllers. FTP Software's PC/TCP for DOS costs $400; it costs $575 for OS/2.

Concord Communications
753 Forest St.
Marlboro, Mass. 01752
(508) 460-4646

Imagine A Tool That Fits This Comfortably.

Imagine NOMAD.

As comfortable as your favorite pair of shoes, NOMAD is the perfect fit for your business and computing environment.

With its flexibility for reporting and analysis and its versatility for application development, NOMAD is immediately at home on your desktop.

NOMAD's relational foundation forms the basis for what industry experts agree is the tightest 4GL integration with DB2. These underpinnings, plus the use of standard SQL behaviors, give NOMAD – and you – the edge in working efficiently with a full range of databases, including Rdb/VMS on DEC VAX machines and SQL-based servers on LANs.

But there's much more. Like NOMAD's careful design for optimum performance with your operating systems. Like a variety of performance-monitoring tools and a reporting optimizer. Couple all this with NOMAD's icon-based tools for GUI design, powerful data management and cooperative processing capabilities, and you have decision-maker's tools that will make sure your machine resources get the respect they deserve.

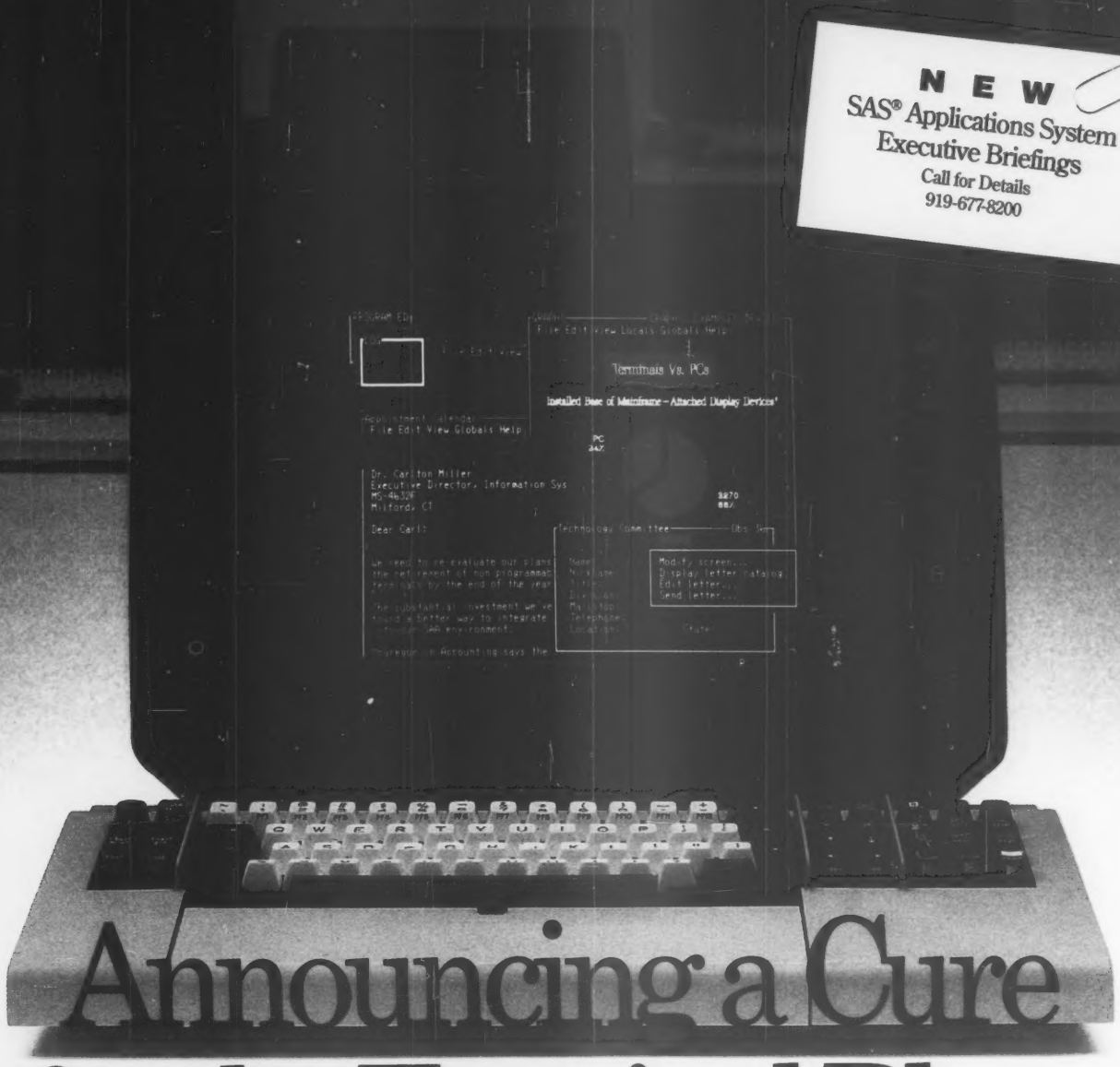
When you bring in NOMAD, you bring in a full business partner. Our total solution includes a full complement of consulting, training and support services – all designed to get the relationship started on the right foot.

To see how comfortably NOMAD fits with all your application requirements, call MUST Software at 1-800-441-MUST.

Imagine NOMAD. Imagine the Possibilities.

MUST SOFTWARE INTERNATIONAL
Member Thomson Information Technology Group

NOMAD is a registered trademark of UBS International Ltd. Numerous other hardware and software products are mentioned by their trade names herein. In all cases, those designations are claimed as trademarks by their respective companies.



Announcing a Cure for the Terminal Blues

Now they're calling it a *non-programmable* terminal. Which might make you think technology has simply passed it by.

At SAS Institute, we see things a little differently. After all, your mainframe—and the thousands of terminals attached to it—are the backbone of your business. Not to mention your largest single investment in computing. And we just don't think you should have to replace that investment to enjoy the interactivity of a PC environment.

Just get the SAS® System of software.

Bring the Individual Productivity of a PC to Your Mainframe.

Only the world's leading applications system could bring the look and feel of SAA/CUA to your mainframe...and breathe new life into your 3270 terminals. Just point and shoot to gain *total* control over your strategic data-driven tasks: data access, management, analysis, and presentation.

Pull-down menus and pop-up windows make it more intuitive than ever to take advantage of the SAS System's wide range of applications—from report writing and graphics to decision support and applications development.

Let the SAS System point the way to greater productivity on *your* mainframe...on your minicomputers and UNIX®-based workstations...and on your PCs running OS/2® and MS-DOS®. Wherever you choose to run the SAS System, you'll get fast-and-friendly software backed by expert technical support, consulting services, documentation, and training.

All from SAS Institute Inc., one of the world's most respected names in software. For a SAS System executive summary, plus details about how you can receive the SAS System for a free trial, give us a call at 919-677-8200. In Canada, call 416-443-9811.

SAS®

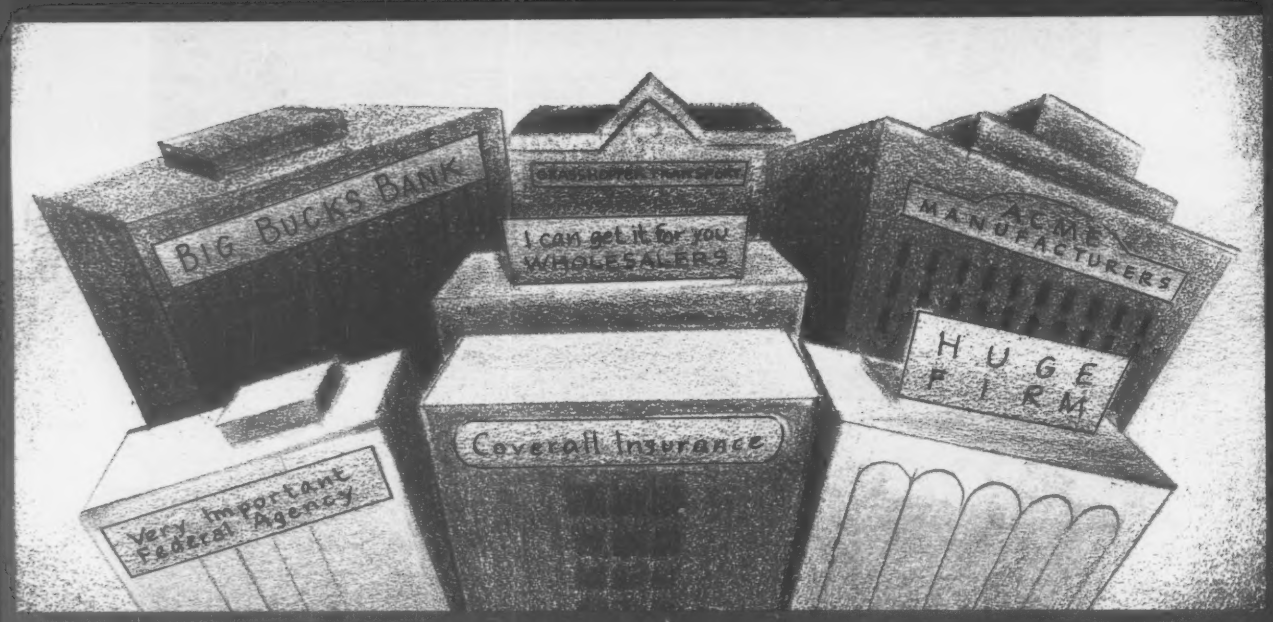
SAS Institute Inc.
Software Sales Department
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. UNIX is a registered trademark of AT&T. SAA and OS/2 are registered trademarks of IBM Corp. MS-DOS is a registered trademark of Microsoft Corp.

*Computer Intelligence, La Jolla, CA.

Copyright © 1990 by SAS Institute Inc. Printed in the USA.

NOW RISC IS OPEN FOR BUSINESS.



In the business world, speed alone won't get you very far. You need balance—of speed and overall systems performance. You need Digital.

Digital balances the power of our Unix®-based DECsystem™ RISC CPUs with high-speed I/O and memory, peripherals, and high-performance networking. That adds up to higher productivity for your commercial applications.

Digital's approach to open computing protects your investment as well. Our Network Application Support (NAS) software lets you integrate multi-vendor applications. We incorporate industry standards, like OSF/Motif,® POSIX, and X/OPEN.® And our membership in the Advanced Computing Environment (ACE) initiative lets you take advantage of ACE-compatible products.

Of course, our UNIX-based DEC systems, featuring the 5100 and 5500, are fully ACE-compatible and are backed by Digital's unparalleled service and support network.

Are you open to the power of Digital's DECsystems working for you? Call 1-800-343-4040, ext. 268. To become a Digital reseller or applications provider, call 1-800-343-4040, ext. PARTNER.

ADVANCED COMPUTING ENVIRONMENT

digital™

© Digital Equipment Corporation 1991. The DIGITAL logo and DECsystem are trademarks of the Digital Equipment Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. OSF/Motif is a trademark of the Open Software Foundation. X/OPEN is a registered trademark of the X/OPEN Company Ltd. in the UK and other countries.

DIGITAL. THE OPEN ADVANTAGE.

MANAGER'S JOURNAL

EXECUTIVE TRACK

Darwin Geiselbrecht has been named director of telecommunications and supervisory control and data acquisition services at **Tenneco Gas**, the Houston-based natural gas pipeline unit of Tenneco, Inc.

Geiselbrecht heads a new department responsible for all telecommunications relative to field operations. He joined Tenneco as a programmer/analyst in Hockley, Texas, in 1982. He was promoted to manager of operating network control in 1987.

Geiselbrecht was formerly employed by Teledyne Corp.'s Geotech unit and holds a bachelor's degree in electrical engineering from the University of Texas at Arlington.

.....

Alfred L. Picarelli has been appointed senior vice president of information systems at the **Grumman Data Systems** unit of Grumman Corp. in Bethpage, N.Y. He replaces Gerald H. Sandler, who was promoted to president of the Grumman Data Systems and Services Group in January.

Picarelli had been vice president of program management at Grumman Data Systems since 1985. A 20-year Grumman veteran, he has held various positions in project management and systems analysis.

He holds a bachelor's degree from Long Island University and an MBA from the New York Institute of Technology.

.....

David R. Hultsman has been named director of MIS at **Texas Eastern Products Pipeline Co.** in Houston.

He was most recently vice president of technology planning at System One Corp. He was the principal System One technology adviser in its facilities management agreement with Electronic Data Systems Corp. He previously held positions at IBM, Mobil Oil Corp., Peer Services, Inc. and Southland Corp.

Hultsman has bachelor's and master's degrees from Southern Methodist University and an MBA from the University of Dallas.

Power to the people

A complex web of computerized transactions is involved in delivery of electric power

INDUSTRY CLOSEUP
IS in Electric Utilities

BY SCOTT WALLACE
SPECIAL TO CW

How many computers does it take to make a light bulb work? A lot more than most people would suspect. Delivering affordable and uninterrupted power to a socket these days is a complex blend of production planning and inventory bartering that typically involves computerized transactions among several utilities.

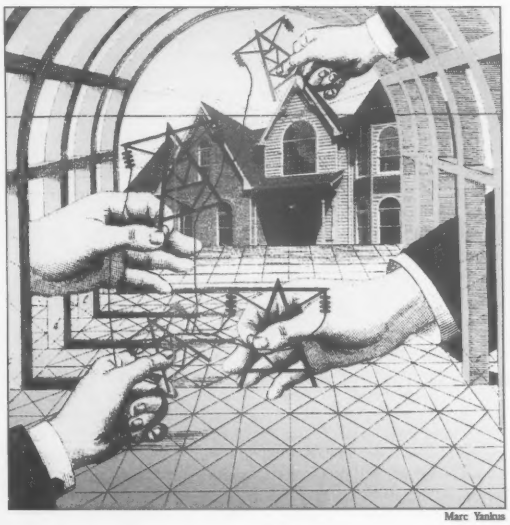
Power pooling among electric utilities has been around since the 1920s, but in recent years, timely intermember communication via technology has become critical to most pools' operations.

"The computer programs and interconnections provide us with the ability to adjust generation to demand on a five-minute basis," says Wayne Smith, manager of the New York Power Pool's (NYPP) Computer Services Group.

These links are especially important as the safety zone between demand and production capacity has dwindled and financial pressures have increased.

"Individual utilities have historically been able to produce 20% or 30% more power than their peak load demand," says Daniel Pfau, vice president of the Index Group, Inc., an information technology management consulting firm in Cambridge, Mass. "These days, those margins have shrunk considerably."

Construction of new generating facilities has slowed because of the costs of plant construction, consumer concerns about using nuclear power and oil reserves as well as growing investor scrutiny of utility financial performance.



Marc Yankus

So neighboring utilities and pool members have increasingly needed to rely on one another, with technology as the facilitator. Sometimes pooling is used to ease shortages, helping individual utilities avoid blackouts during unpredictable bouts of extreme weather. However, most power pool transactions are scheduled in advance, based on load forecasts that use historical and real-time data to predict power needs (see story page 80).

Through the NYPP in Guilderland, N.Y., seven investor-owned utilities and the New York Power Authority provide more than 99% of the state's electricity. Furthermore, during the spring and summer months each year, the NYPP also manages transmission of 800 megawatts of hydropower from Quebec to its members.

In 1990, NYPP's power brokering services, which are run out of its computerized power control center, saved its member utilities $93 million. Because operating costs are passed on to consumers, those savings were reflected on customers' bills.

Jack Valentine, communications specialist at NYPP's power control center, explains how: "One of our members will call in and say, 'My costs of generation for the next hour for my

Continued on page 80

IS concerned but not vocal on privacy issues

BY MITCH BETTS
CW STAFF

Many information systems managers come down with a bad case of "not my job" syndrome when it comes to helping the company protect the privacy of customer information, according to H. Jeff Smith, assistant professor at Georgetown University's School of Business Administration in Washington, D.C.

Smith recently conducted in-depth interviews on the privacy issue with 50 IS professionals in seven businesses: three banks, three insurance organizations and one credit-card company.

"It was a rare IS executive that I interviewed who was willing to go up against marketing people in the organization and say information should not be used this way," Smith said.

Not one of the IS executives interviewed took a leadership role in raising privacy concerns at the company, Smith reported.

Smith said the finding that the IS department takes a subservient role in privacy matters is a troubling one because the IS department probably has the best view of the company's overall collection, use, protection and release of personal information.

Compared with workers in other departments, "the IS people were more inclined to say that there is a big difference between the written policy [on information privacy] and actual practice in the organization," Smith said. "But they're not at all inclined to go into the executive suite and complain."

The IS managers said they are sometimes troubled by the way their company uses or releases customer information.

Smith cited the following statement by one IS executive as typical:

"If you ask a lot of executives here at the bank if we are violating customers' privacy, they will probably say 'no.' But some of the things that are done with customers' information would make [the customers] angry, I believe, if they knew about it."

The IS executive went on to say that despite his concerns, "it is not our role in the IS community to beat businesspeople over the head about this. It is our role to take their requirements and to implement them."

Ideally, chief information officers would raise information privacy concerns at the executive level, while midlevel IS managers could keep an eye out for privacy problems on individual system projects, according to Smith.

"What they told me is that they aren't raising those red flags very often, even though they are sometimes personally troubled."

Committee criticizes FDA systems' disarray

BY JIM NASH
CW STAFF

WASHINGTON, D.C. — A government committee's report dissecting the U.S. Food and Drug Administration (FDA) states that the agency's information systems department is rudderless and in disarray.

The agency in charge of ensuring the safety of new food and health products is in danger of being overwhelmed by political pressures and technological advances, according to the Advisory Committee on the FDA. Sherwin Gardner, one of 15 committee members and the senior vice president for science and technology at the Grocery Manufacturers of America here, said the FDA's underused and piecemeal computer system "is the single greatest problem" facing the organization.

The committee was formed at the behest of Health and Human Services Secretary Louis Sullivan, and its report was delivered to Sullivan May 15. Committee members spent one year researching the FDA and interviewing 150 witnesses. Members represent a cross section of technical, medical and managerial professionals.

Released last month, the report praises FDA employees but criticizes Congress and the president for heaping the agency with new responsibilities without providing adequate resources to meet them.

Committee Chairman Charles Edwards issued a statement with the report, warning that "without fundamental changes . . . the FDA will not be able to function adequately in the years ahead, and the risk of impending public health catastrophe will only grow." A spokesman for the FDA declined to comment on the report.

The agency's work is being diluted and delayed by a nationwide crazy quilt of FDA-owned IBM and Digital Equipment Corp. mainframes, Sun Microsystems, Inc. workstations and Compaq Computer Corp. desktop computers. Added to that are the often unique workstation and software setups that are lent to FDA application reviewers by pharmaceutical companies hoping to speed the process.

"They've got computers all over the place . . . but throughout the committee's hearings, the agency was unable to provide answers to basic questions" about the systems themselves or even the FDA's own infrastructure, Gardner said.

MANAGEMENT SHORTS

Bush pushes telecommuting

President George Bush continued to extol the benefits of telecommuting last month, saying that telecommuting is a concept whose "time has come" [CW, Nov. 26, 1990]. In a letter of greeting to the Minnesota Telecommuting Conference held in Bloomington, Minn., Bush stated that telecommuting reduces traffic congestion, fuel consumption and air pollution while meeting the needs of working parents.

After more than 18 months of discussion, the Society for Information Management (SIM) has voted to unify its more than 45 regional chapters.

According to John Owens, president-elect of the SIM user group and vice president of information systems at Carrier Corp. in Farmington, Conn., the local chapters will have until Jan. 1, 1992, to amend their bylaws and dues structures in accordance with the unified body.

XEDIT
For Unix
REXX too...
Order ani-XEDIT and ani-REXX today.
800-228-0255
wrk/grp
the workstation group

Power

FROM PAGE 79

most expensive 200 megawatts are $45 a megawatt. What have you got that's less?' " The center's Hitachi Data Systems Corp. AS/8083 computers then run through the available production and identify the cheapest 200-megawatt block, he says.

Each pool member provides daily projections of power availability and generating costs as well as power requests.

The price NYPP members pay for power is based on the projected cost for the requesting utility to produce power and the actual cost of the pool-delivered power.

"Let's say that 200 megawatts costs $25 a megawatt," Valentine says. "The selling price will be $35, a split between the $45 cost of the buying utility generating that power and the $25 for the selling utility to generate the power. It's called shared savings."

Power transactions, which are set up on an hour-by-hour basis, are handled by the NYPP's Hitachi computers. Once contingency analysis software has confirmed the security of the transactions, the system transmits generation information to the member computer. It is then up to dispatchers at the member power control center to determine which generators to ramp up or down and schedule the adjustment manually or by using a keyboard.

The NYPP computer communicates over 9.6K bit/sec. leased lines with redundant circuits to member dispatch and control centers. Microwave connections provide a communications backup in the event that phone circuits are disabled.

Tight coordination

The Pennsylvania, New Jersey and Maryland (PJM) Interconnection relies on tightly coordinated dispatch to make sure each of its members has an adequate supply of low-cost power.

"Member companies inform PJM ahead of time what generation will be available and what the cost of that generation is," says Ken West, supervisor of computer applications at Delmarva Power and Light in Newark, Del. "That's handled through an interactive, computer-to-computer link. PJM then schedules the [power generating] units that will be needed to generate the load forecast for that day."

The schedule is communicated over telecommunications links to computers at each of the member utilities' dispatch centers. It is up to the individual utility to determine the optimum way to generate its allocation, which is usually based on costs.

The operating costs for each generator vary depending on its loading. For instance, taking a generator from 90% capacity to 95% could cost a dollar more per megawatt than taking the generator from 60% to 65%.

"Each generator has a cost curve. PJM takes all the units that are available and models a composite cost curve," West says.

The cost of power is then calculated for the load at any one time, determining how much power each generator should produce.

Power as a commodity

The Western States Power Pool (WSPP), a group of public and investor-owned utilities, federal power marketing agencies and rural electric cooperatives in 22 states and British Columbia, runs what amounts to a mini commodity exchange on a personal computer bulletin board. Members can "trade" power using a system of "puts" and "takes." When a member finds power it wants to purchase, it calls the providing utility and arranges the transaction.

WSPP members in the U.S. provide about 25% of the country's generating capacity and serve more than 60 million people. From May 1988 through April 1990, WSPP transactions saved members $71 million on trades of more than 13.5 billion kilowatt hours of electricity — the equivalent of 2 million households' annual consumption.

To facilitate the exchange of information among WSPP members and other electric utilities, the Western States Coordinating Council (WSCC) in Salt Lake City has prepared a communication software standard that has been adopted by all of WSCC's regional members. "This will allow one company's computer to talk to another company's computer and exchange data," says Dennis Eyre, administrative manager at WSCC.

Wallace is a free-lance writer based in Warwick, Mass.

Forecasting first

PG&E's Hong: *Load forecasting comes before pooling*

Before there is power pooling, there is load forecasting.

Load forecasting, through its use of computer-based data analysis and modeling, enables utilities to keep tabs on power needs, scheduling additional energy from power pools as required. At Pacific Gas and Electric Co. in San Francisco, load forecasting consists of daily, weekly, monthly and yearly forecasting of system load, says Wayne Hong, supervising systems analyst in the Energy Management Systems department.

PG&E bases its forecasting on 10 years' worth of statistical data on temperature patterns in the state. For short-term forecasts (daily and weekly), this information is analyzed against real-time data gathered every two to 10 seconds, Hong says.

"We have about 300 remote terminal units that collect about 14,000 measurements from our transmission lines, towers, power plants and power houses about power flow and transmission line load," Hong says.

Number crunching for both the forecast and real-time data is done on PG&E's Control Data Corp. Cyber mainframe, which also handles statistical models of PG&E's energy load.

System dispatchers can make adjustments to the forecast on the fly or whenever increases in the load are needed, Hong says.

When more power is called for, operators telephone neighboring utilities involved in the Western System Coordination Council to buy energy. With the coupling of temperature forecasts and real-time measurement, short-term forecasts have less than a 2% error rate.

Longer term forecasts at PG&E take into consideration such factors as demographic distribution, the economy and population growth.

SCOTT WALLACE and LORY ZOTTOLA

digital

digital update

NEWS AND VIEWS JUNE 1991

An OPEN *Discussion* on Service

Changing business climates. Open computing environments. Systems integration. Partners, pricing, and training. Here Russ Gullotti, Vice President of the worldwide Digital Services organization, addresses some of the challenges facing his services organization today. And he answers tough questions often posed by customers like you.

Russ Gullotti
Vice President
Digital Services

Why the recent restructuring of Digital's services operations? And how will it affect customers?

Now Digital has a single services story to tell. We've done some streamlining, combining our former Customer Services (CS) group and Enterprise Integration Services (EIS) under one services umbrella — simply named Digital Services.

This is proof of the company's commitment to investment in services. It's an evolution, not a revolution. Digital has always been a leader in providing services and support. Like others in the industry, we're looking to define an organizational structure that works best. We want to make the relationship between you and Digital run a little bit easier, more efficiently, and more effectively for both of us.

It's important to note that we manage and provide service locally at all our field locations around the world. Digital's working resources are right out there with you. The corporate services organization provides the ties with Digital's business units and marketing strategies to implement methodologies, tools, and training. The 43,000 services people in the field still take direction from the local account manager. Out there is where day-to-day decisions are made — in direct support of you.

Today everyone is talking about openness. Open computing. Open systems. Now we're hearing about open services. How do you define open from the services perspective?

When it comes to services, open is the ability to carry a full set of solutions into a heterogeneous computing environment. It is when we tailor a flexible package to meet your particular needs, and it includes standards. For example, Network Application Support (NAS) implements a full set of global and industry standards.

Digital is setting the standards for open multivendor service and support. Some computer manufacturers may have open services, but not open computing. Others have open computing, but they can't offer open services.

We can provide it all — from consulting, through tailored hardware and software, tailored networking, support services, recovery services, facilities management, and training. You name it, we've got it. And if we don't have it, we've got a partner that does.

Integrate other vendors' systems together? We can do that. Write software on someone else's platform? We can do that.

Our inherent computing style and breadth of service capabilities enable us to plan, design, implement, and manage a tailored solution — to help give you the unique advantage you need to succeed in your marketplace.

"Digital is setting the standards for open multivendor service and support."

Digital is known primarily as a hardware company. How can Digital remain unbiased as a systems integrator when recommending equipment as part of a solution?

First, we need to change that perception. I'd say the best way to describe Digital is as a solutions provider, with excellent hardware and excellent software, as well as outstanding services. The fact that 40 percent of our revenue is generated from services certainly suggests that we are much more than a hardware company.

As to whether we're biased, how much more unbiased can you be than to dedicate yourself to run on anybody's platform, whether it's Digital or not? We've proven ourselves there. We recommend other people's equipment and applications all the time. And we work solutions to incorporate existing systems from other vendors. We service some 8,000 pieces of non-Digital hardware and software, which is a strong indication that we're not intimidated by multivendor environments.

Of course, there are some customers who will never believe that we could be unbiased. In that case, we won't try to convince them. Instead we'll work with a partner they're comfortable with, and do business from there. Other customers don't care. They simply say, "Look Digital, just get that job done. If you sell us some of your equipment, that's fine, as long as the problem's solved."

continued➤

➤ Open Services continued

We hear from you that you feel Digital protects your investment. That's because we come in and work from where you are, building toward where you need to be.

Digital has formed alliances with several consulting firms. What do these alliances entail, and what advantages do they offer?

No company can always be an expert in everything. And no company can do everything all by itself. You have to have partners.

Early on in a project, we work with you to formulate service strategies. We decide where we will use our own skills and where we won't. Sometimes it would cost us too much inside, or we realize someone else is already much better at something and we look to utilize their established expertise.

In a formal Digital Service Alliance Agreement, like we have with Andersen Consulting, Arthur D. Little, and others, we go for high-quality partners with top-notch skill sets. Having such an agreement in place means we've worked the terms and the details out in advance — things like who'll be the prime contractor, who'll be the subcontractor, in what instances, in what time frame. So we don't waste time on contractual language when you have a business challenge to meet.

What about global systems integration? Can Digital handle it?

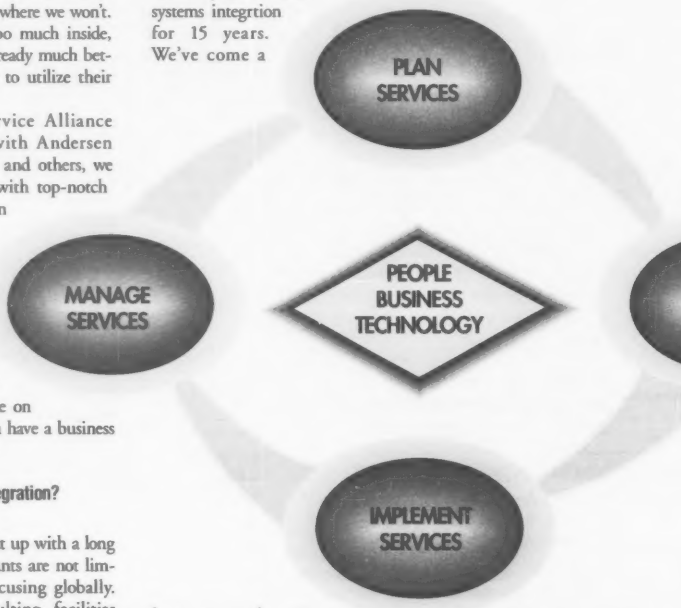
Yes we can, and I can back that up with a long string of success stories. Accounts are not limited geographically. We're focusing globally. Whether they're doing consulting, facilities management, or custom software, our program managers are being trained in the same jargon, with tools that span oceans.

We're all dealing with the competitiveness of today's global environment. We're the ones in the technology and information business; let us tackle that, while you "stick to your knitting" and focus on the business at hand. You do what you do best. We do what we do best. And we both win in the process.

Here's a particularly tough question: A customer says "I've let Digital run a systems integration program for me before, and you failed. Why should I give you another chance?"

Oh, I've heard similar things. But I'll bet it's been more than two years ago since we've worked with a customer who has that to say.

In the past few years we've put more capabilities in place, and we've concentrated on capitalizing on our experience, documenting it as we go. Digital has been doing what the industry now calls systems integrtion for 15 years. We've come a long way when it comes to collecting and sharing our wisdom. You can count on our people performing in a consistent manner, based on the knowledge that comes with experience.



We've done some things countless times for multiple customers. Sure, we've made some mistakes in the past, but we've learned from them. Today we have an extremely high success rate with the programs we're doing.

What's Digital doing to help reduce the cost of services?

Certainly we're working at being more productive as a corporation. As we succeed with that, we will be able to provide our services very competitively

We continue to invest heavily in service delivery technology to make us more effective and more efficient. Our goal is not only to reduce costs but to deliver value. There is a premium involved with truly open computing and global capabilities, but payback is there too.

Digital Services: The Open Advantage

"Digital protects your investment because we come in and work from where you are, building toward where you need to be."

You need to assess what value you expect from your service investment. If you're looking for someone to sit behind a keyboard and type in ones and zeros, you can probably get that right around the corner. But if you're looking for professional documentation of a system, comprehensive training, upgrade layering on new software releases — that's what Digital brings to the table.

What can a customer do to help ensure that a services program runs smoothly?

It's critical that you focus on what computing solution you need for your business success. Define it. Obtain a senior management commitment. And understand the process of change. Then open communication, coupled with well-set expectations and a team approach for everyone involved, will certainly provide the foundation for success.

How does Digital handle the rapid rate of technology change?

Training. Our commitment to training is phenomenal. We're keeping the pipeline of educated consultants and program managers flowing. Do we train on multi-vendor hardware and software? Definitely yes. Will you ever find a person in the field who's not fully briefed on a new release of some software. Perhaps, but not for long.

It used to be you could keep pace with the rate of change on your own. But you can't afford it anymore. So you can utilize our resources to help stay abreast.

Given the commitment Digital is making to services as a major corporate direction, what is going to differentiate your service and support offerings from others in the industry?

Our people! They are absolutely energizing. Every time I tap into another part of the services organization, I encounter a team of brilliant people. The talent is very broad-based. I find it everywhere I go. We've got a powerhouse. We are becoming the undisputed services leader in open computing support. It's our people who are going to take us there and keep us there. And it's our people — working with yours — who are going to make sure we both come out winners.

The Picture Is Clear:

DECpresent is the first affordable, easy way to use your workstation as a presentation graphics system.

A recent addition to Digital's Compound Document Architecture (CDA) suite of publishing applications, DECpresent helps you create professional-quality presentation graphics right from any VAX VMS, VAX ULTRIX, or RISC ULTRIX workstation.

DECpresent offers a long list of easy-to-use features aimed to please both novices and experienced graphic designers. It runs under the DECwindows and Motif multitasking interfaces to provide users with more power and greater flexibility than similar PC-based graphics packages.

DECpresent at a glance. Here are the three main views: the Slide View, the Outliner, and the Sorter.

Slide into Action

DECpresent offers an outliner for building key points in a presentation. While working in the outliner, the presentation slides are automatically created according to the selected template. (More than 20 templates are included to ensure consistent formatting and styling.) A slide sorter acts as an electronic light table for copying and deleting slides, or rearranging sequence.

DECpresent also includes a color paint package, a full-featured table editor, a charting package for creating business graphics, a free-form drawing tool kit, and a 400-item library of revisable clip art.

Output options are flexible. Color hardcopy or color transparencies can be made with the new Colormate PS PostScript printer (LF01R). A film recorder (or service bureau) can be used to produce 35mm slides. Black and white hardcopy and overheads can be output via any PostScript laser printer. DECpresent even includes a slide show utility for displaying presentations right on the workstation screen.

Ready to Work in Your Computing Environment

Thanks to its CDA capabilities, DECpresent makes it easy to import and export text, graphics, and images from compound documents created with DECwrite. Spreadsheet information from DECdecision or other spreadsheets like Lotus 1-2-3, as well as snapshots of CAD designs from DECview3D software, can also be imported and exported easily.

Using Digital's Network Application Support (NAS), DECpresent can be accessed by other applications and systems working in a multivendor environment. In turn, information located anywhere on the network is available to DECpresent. Presentations and documents can link to source data through LiveLink technology, so graphics, charts, tables, and text are automatically updated as source data changes.

Try DECpresent and DECwrite for FREE for awhile!

Order a VAX VMS, VAX ULTRIX, or RISC ULTRIX workstation and we'll include DECpresent and DECwrite trial software free, with a 45-day user license. Plenty of time to see how fast and easy it is to create impressive presentations with DECpresent, and to create documents containing text, graphics, and images with DECwrite.

To take advantage of this offer, orders must ship by June 30. For more details,call your Digital sales representative, or 800-343-4040, ext. 675.

For more information on DECpresent, call Digital's Technical Consulting Center at 800-343-4040, ext. 675.
If you're ready to order, call 800-DIGITAL (800-344-4825).

DECpresent for VMS workstations
Order # QL-YHEA9-PB
$860.00

DECpresent for ULTRIX workstations
Order # QL-YHFA9-PB
$860.00

DECpresent for RISC workstations
Order # QL-YHGA8-PB
$860.00

The FONTS Have Arrived! (Now What to Do with Them?)

Digital's networked PrintServer printer family has a proven track record in mixed-vendor computing environments. Over the years, however, customers have been requesting access to popular third-party fonts for both video display and printer use. Now we've responded by giving you what want, and more.

The DECfonts Typeface Collection V1.0 provides VMS and ULTRIX systems with a fully automated installation of 14 industry-preferred fonts, including many made popular by Apple Computer's LaserWriter printer family. All fonts are fully compatible with all DECwindows display devices and Digital PostScript printing solutions.

NEWSFLASH

Once installed, these fonts are easily accessible from a wide range of network display and printing devices. They may even be loaded into Digital's PrintServer printer family as resident resources, allowing users to access them as though they were actually part of the printer. These fonts may also be used with desktop printers, including the newest member of our DECLaser printer family — the low-cost DECLaser 1150 four-page per minute PostScript printer.

Put the *Digital Technical Journal* to Work for You

At last, engineering professionals like you can gain regular access to the *Digital Technical Journal* — and find out how leading engineers inside Digital are developing products and solving problems.

Each issue of the *Journal* presents a focused group of papers on a major Digital product or technological theme. Written by our own project engineers, papers offer in-depth technical discussions on how our products are designed, developed, manufactured, and maintained.

Subscribe today for $40, and over the next year you'll receive quarterly a wealth of technical information not available elsewhere in this form. Plus, if you subscribe by June 30, 1991, you'll receive a FREE back issue from the 1990 volume.

For subscription information and a list of back issues, contact Cathy Phillips at 508-481-3946, FAX 508-493-3253, or via the network to DTJ@CRL.DEC.COM. Or write to:
Digital Equipment Corporation
Digital Technical Journal
146 Main Street (MLO1-3/B68)
Maynard, MA 01754-2571

digital™

The recently announced DECserver 90L terminal server offers a bevy of great features. It's easy to set up and use. Its software is built right in. It provides high-speed communications and fast connections to service nodes. The price is low. And the size is amazingly small — about the size of a VHS video cassette.

But, you may ask, when do you want to use the DECserver 90L? And what about Digital's other terminal servers — the DECserver 200 and the DECserver 300? When and where would you want to use them?

To answer these questions, here's some comparative information on all three DECservers to help you decide which one can best handle the job for your particular computing environment.

- Use LAT protocol
- Need only one session
- Need to connect async terminals and serial printers
- Don't need modem control.

◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆

The DECserver 90L is an eight-line LAT protocol terminal server that supports terminals and printers. Each line or port can establish a single connection to one computer or service at speeds up to 38.4 Kbits per second. The DECserver 90L software is ROM-based and does not require a VAX or other CPU for downline loading. It connects directly to a ThinWire Ethernet LAN.

The DECserver 90L offers basic functionality in a compact box at a very competitive price. It is the ideal terminal server for connecting users in a small departmental network, or connecting many small workgroups into a larger corporate network. It can stand alone or be mounted within a DEChub 90.

- Use LAT protocol
- Use multiple LAT sessions
- Use TD/SMP for VT420, VT330/340 dual session support
- Use full modem control
- Connect async terminals, serial printers, modems, and reverse-LAT configurations.

◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆

About the size of a standard videocassette recorder, the DECserver 200 terminal server supports eight lines or ports, and it allows up to eight multiple LAT sessions per user.

The DS200 supports line speeds up to 19.2 Kbits per second. It also supports the TD/SMP dual session split-screen protocol for use with VT420, VT330, and VT340 terminals. Software is loaded from a networked VAX running a VMS or RISC-based ULTRIX operating system.

Another feature is full modem control with DB-25 pin connectors. This allows you to connect modems and reverse-LAT applications. This terminal server works best in environments that require flexibility — where small user groups are distributed on the network, and where applications vary from traditional terminal and printer connections, to modems, multiplexers, and non-Digital computer connections to the network.

- Require LAT and/or Telnet protocols
- Use multiple LAT sessions
- Use TD/SMP for VT420, VT330/340 dual session support
- Connect async terminals, serial printers, and reverse LAT configurations
- Use DTR-DSR control signals
- Require standard and/or ThinWire Ethernet.

◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆

When you need a terminal server with higher functionality, consider the DECserver 300.

The DECserver 300 shares many features with the DECserver 200: size, multiple session capabilities, line speeds, and TD/SMP dual session support.

There are key differences too. The DECserver 300 supports 16 lines or ports. The DECserver 300 has both a Standard AUI Ethernet connector and integral ThinWire connector. Software is loaded from a system on the network — either a VAX running VMS or RISC-based ULTRIX software, or an MS-DOS-based PC.

The DECserver 300 also offers multiprotocol support with LAT and Telnet protocols concurrently. The LAT protocol is used primarily within VAX networks; Telnet primarily within UNIX networks. Such a multiprotocol capability makes this terminal server well-suited to work in today's mixed-vendor multiprotocol networks.

In fact, the DECserver 300 works best in diverse environments, with small-to-moderate sized user groups requiring flexible connections, multiprotocol communications, ThinWire and/or Standard Ethernet, and reverse LAT configurations capable of using DTR-DSR control signals.

Feature	DECserver 90L	DECserver 200	DECserver 300
Network Protocol	LAT	LAT	LAT/Telnet
Async Lines	8	8	16
Maximum Line Speed per Second	38.4Kb	19.2Kb	19.2Kb
I/O Connectors	MMJ	DB25-pin	MMJ with DTR-DSR
Modem Control	No	Yes	DTR-DSR Control Signals
Multiple Sessions	No	Yes	Yes
TD/SMP Protocol for VT420, VT330/340 Dual Session Support	No	Yes	Yes
E-net Interface	ThinWire	Standard	Standard/ ThinWire
Printer Support	Yes	Yes	Yes
Reverse LAT Support	No	Yes	Yes
Dedicated Circuit	No	Yes	Yes
Preferred Service	No	Yes	Yes
Password Protected	Yes	Yes	Yes
Rack-Mountable	Yes with Hub	Yes	Yes
Terminal Server Manager (TSM) Support	No	Yes	Yes
Power Supply	Wall-Mounted AC/DC Adapter	Internal	Internal
Host Software Required	No	Yes	Yes
Service Hosts VMS, RISC ULTRIX	Yes	Yes	Yes
Part Number	DSRVD-AA	DSRVB-AA	DSRVF-BA
Price	$1,450.00	$3,575.00	$4,700.00
Price per Port	$181.00	$447.00	$294.00

For more information on how to choose the right DECserver for your computing needs, contact your Digital sales representative or authorized Digital distributor.
Or call our Technical Consulting Center at 800-343-4040.

The following are trademarks of Digital Equipment Corporation: CDA, DECdecision, DEClaser, DECpresent, DECserver, DECwindows, DECwrite, the DIGITAL logo, HDA, LiveLink, PrintServer, RA, ThinWire, ULTRIX, VAX, VMS, VT. Apple and LaserWriter are registered trademarks of Apple Computer, Inc. Lotus 1-2-3 is a registered trademark of Lotus Development Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Motif is a registered trademark of the Open Software Foundation, Inc. PostScript is a registered trademark of Adobe Systems, Inc. UNIX is a registered trademark of UNIX System Laboratories, Inc.
Listed prices are base U.S. Manufacturer's List Prices and are subject to change.

COMMENTARY

Clinton Wilder

Successful CIOs must cultivate a business attitude

Should the chief information officer be a business expert or a techie?

The debate rages on and on. The CIO must understand the business, says one camp; technology decisions can be delegated. "That's a prescription for disaster!" say the revisionists (Gartner Group's Bruce Rogow prominent among them). "A thorough grounding in technology is more important than ever if CIOs want to implement enterprisewide information infrastructure in the 1990s."

The most popular answer, of course, is "both" (see story page 86). The model CIO should be that rare breed who moves effortlessly between the glass house and the boardroom, equally conversant in the jargon and buzzwords of each. As an added bonus, the CIO should have done a stint in consulting or academia just to complete the well-rounded picture.

> SPECIFIC INDUSTRY KNOWLEDGE can be taught; attitude cannot.

And then there is the consultant's favorite response: "It depends."

But a slightly different perspective on the debate emerged at a recent conference at Babson College's Center for Information Management Studies in Wellesley, Mass. After Robert Shafto, president and chief operating officer at The New England, the large Boston-based life insurer, gave his presentation, he was asked the $64,000 business vs. techie question.

"I think it's more a question of attitude than one of background," Shafto said. "The important thing is that the person thinks like a businessperson first."

Shafto knows from whence he speaks. Seventeen years before his promotion to president, he joined The New England as second vice president for computer systems development and information services. Before that, he worked at Electronic Data Systems for eight years.

So, you might think, Shafto was a technology whiz who eventually learned the insurance business well enough to step into the president's shoes? Nope. He started his career as a life insurance actuary in the late 1950s and got into computers quite by accident when he was asked to learn programming on an IBM 1620.

At EDS, he was hired to sell computer services to the insurance industry because he knew it well. No matter what his business card said, he was always an insurance man first and a computer technologist second.

Shafto's observation is sage advice for aspiring IS professionals trying to chart a course to the top of their organizations. Sporting an MBA or picking up postgraduate courses in marketing or finance is fine, but academic achievements don't always change the way you think.

Having the right business-oriented attitude means much more than understanding the concepts of return on equity or interest-adjusted net product cost. It means understanding your industry and your company. Where is the company now and where is it going? What changes do you anticipate in the next five years in your customers, your products and your competitors?

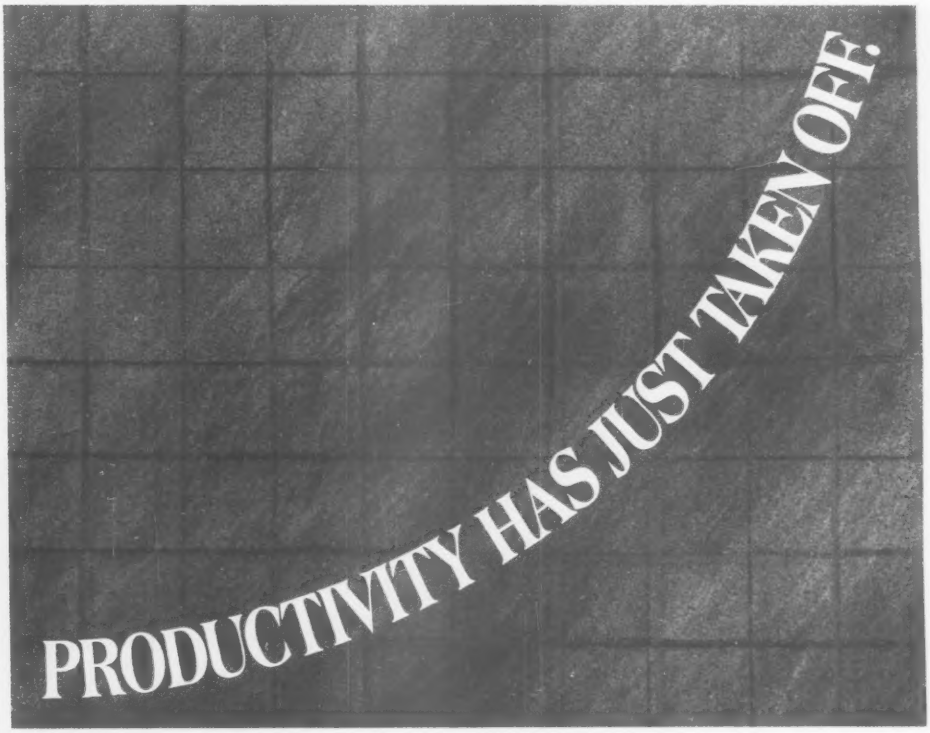
If you can't answer those questions, you certainly can't identify potential applications or new technologies that can help the firm reach its business goals. Even worse, your increasingly PC-literate end users, who do have that understanding, will feel they can design better technology solutions than you can — and they may be right.

One recent phenomenon may seem, on the surface, to contradict this point: prominent CIOs who change industries. One might ask how Jack Cooper's solid reputation for helping CSX's trains run on time made him qualified to help hawk beverages for Seagram's. Or how Allen Ditchfield's successful IS strategy at MCI can be duplicated to sell more auto insurance at Progressive.

The answer, I believe, is that the new employers of those two IS executives were convinced they had the right business attitude. Specific industry knowledge can be taught; attitude cannot.

If you happen to delight in the marvels of Cobol subroutines or asynchronous X.25 links or CICS data structures, there is nothing inherently wrong with that. But those feelings must take a backseat to your excitement over a 10% market share gain in the UK or that nice little profit spike in the third quarter. The more the CIO measures IS success as business success, the better for the company — and the CIO's career.

Wilder is *Computerworld*'s senior editor, management.



Introducing CSP/ADE™

Now there is an AD/Cycle™ toolset that increases the usability and productivity of IBM's CSP. It's CSP/ADE, or the Cross System Product/Application Development Enabler by K-C Computer Services.

Because CSP/ADE supplies over 70 percent of the CSP source code needed to produce quality business applications, the specification phase is shorter. CSP program design is completed by simply incorporating your unique business logic with the standard CSP/ADE object-action applications models.

Build/test time for applications is faster because CSP/ADE applications models are delivered pre-tested, tuned and executable. Maintenance time is reduced because all of your applications now have a similar and familiar architecture.

And productivity soars.

If you'd like to see your productivity take off, call K-C Computer Services for more information, at 1-800-346-KCCS.

KCCS IBM Business Partner

K-C Computer Services
A Kimberly-Clark Company

AD/Cycle is a trademark of The International Business Machines Corporation.

CEOs say CIOs should wear many different hats

BY GARY H. ANTHES
CW STAFF

BALTIMORE — Information systems executives are increasingly expected to be Renaissance people, according to their bosses at the top of the corporation.

At a recent seminar sponsored by the David D. Lattanze Center for Executive Studies in Information Systems at Loyola College, four chief executive officers explained what they expect from IS.

IS professionals now have to be "much more flexible, much more businesspeople," said Gary DiCamillo, president of the U.S. Power Tools Division of Black & Decker Corp. "They have to be agents of change. They have to understand business, and they have to integrate [that knowledge] into their work."

DiCamillo said Black & Decker is decentralizing IS by moving programmers and analysts out of the data center and into the functional departments served by systems. Of senior IS management, he said, "I look for solid businesspeople, secondarily technicians."

Robert Sywolski, chairman and CEO of Cap Gemini America, Inc., stressed that a chief information officer must have feet in both the business and technical worlds. "CEOs expect systems people to master new technology, filter it and select the right balance between technical wizardry and application utility," Sywolski said.

Several speakers said CIOs must expand their corporate horizons because it is no longer sufficient to automate manual functions. The payoff for companies with mature systems will come from fundamentally "re-engineering" the underlying business processes, an effort that requires IS people to plunge deeply into those processes.

Overhauling key business functions is a challenge facing Joseph T. Ambrozy, IS vice president at Bell Atlantic Corp., which is rethinking its business operations as part of its System 2000 project. He said Bell Atlantic's competitive advantage will come not from technology itself but from the re-engineered functions that technology makes possible. "Forget the functional stovepipes; look at the business holistically," Ambrozy advised.

Susan M. Arseven, director of medical group IS at American Cyanamid Co., said she "runs IS like a business." She appointed product managers to develop IS products such as voice mail and training services and client service representatives to sell them to users in the company. She also established total-quality management teams within IS that were so successful, they have received requests to train others outside of IS.

"Our CEO expected new systems, but we've given him more than that," Arseven said. "We're giving him methods to help him strengthen and improve his whole organization."

Despite this success, Arseven said, the full potential of her IS organization has not been tapped.

"I'd like to be more closely integrated with both the day-to-day and the strategic activities of the company. Our business units don't understand what IS does. That's changing, but not fast enough for me."

"CAMBEX IS INTRODUCING SHORT-TERM MEMORY RENTAL— JUST WHEN I NEED IT MOST."

If you are like most IBM System/3090 mainframe users, the effect of tight economic conditions, internal streamlining and restrictive budgets has made cost savings a key goal.

Cambex can help you reach it. Because now, for the first time, Cambex is offering 3090 and ES/9000 users a short-term memory rental and leasing program that gives you maximum flexibility, configurability and freedom of action at the lowest prices ever seen.

As mainframe upgrades have grown more frequent and complicated, many users do not want to lock into fixed storage configurations or capacities under a long-term lease.

With Cambex's unique short-term rental and lease plans, you don't have to.

The plans let you upgrade or reconfigure central or expanded memory on any mainframe on a rental term as short as 90 days. We'll install *either Cambex or IBM storage cards*, as you prefer. Cambex STOR/9000 cards are interchangeable with IBM's, so the upgrade is fast, easy, safe, and immediately recertified by IBM.

Cambex cards are also far less costly than IBM's — so you get a major additional cost savings. A Cambex card can be used in all 50 3090 models, so you can reconfigure a number of mainframes from a single pool of rented or leased cards, for even more savings.

Cambex factory-trained technicians install and reconfigure the storage in just a few hours. At no cost to you. And for any rental period of 90 days or more that your site requirements demand.

If you are an IBM mainframe user, turn to Cambex for your memory today. If you are planning to acquire a 3090 or ES/9000 in the future, get just the processor and leave the memory to Cambex. You'll see savings you never thought possible.

CAMBEX TO THE RESCUE.

Cambex Corporation
360 Second Avenue
Waltham, MA 02154
617-890-6000

Cambex

Cambex also designs and manufactures storage solutions for the IBM RISC System/6000.

IBM System/3090, ES/9000 and RISC System/6000 are trademarks of International Business Machines, Inc.

More honors for Peterson

The Lattanze Center recently presented its Lattanze Information Systems Executive of the Year award to DuWayne J. Peterson Jr., executive vice president of operations, systems and telecommunications at Merrill Lynch & Co., for "his emphasis on quality and his significant accomplishments."

Peterson joined Merrill Lynch five years ago with a CIO title, a billion-dollar budget and a charter to improve and expand the company's computers and communications dramatically. He promoted total quality management and, when he retires this month, will leave behind a legacy known as Peterson's Information Technology Blueprint.

At the Lattanze seminar, Peterson offered CEOs and CIOs this advice:

- "CEOs have to be involved; they have to appreciate IS and the CIO's role in the company."
- "Know the customer value chain as it flows back to the business. Spend time with your customers."
- "Are you the change agent or are you the reactionary? You must have change agents in your company."
- "Planning is great, but we're measured on execution."

GARY H. ANTHES

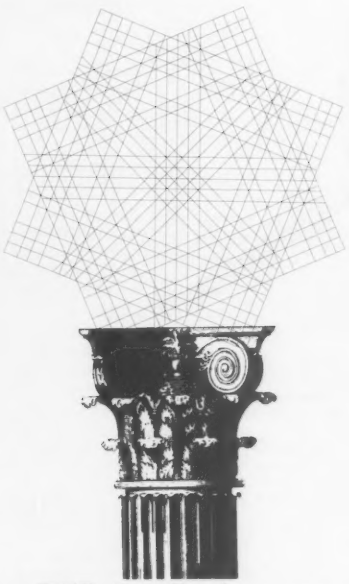
Salute the heroes

[redacted]

who find the answers

[redacted]

with information technology.



She saw a terrific opportunity.

He solved a thorny problem.

The key for them--and others like them--was information technology.

They're real heroes whose ability to solve problems won big victories for society.

Each year world leaders in information technology gather to recognize these new stars of the information age who use technology to make the world a better place.

For tickets call (617) 349-3704.

The Third Annual Computerworld Smithsonian Awards

June 10, 1991
National Building Museum
Washington, D.C.

Tight state budgets demand creative solutions from IS

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — As states clamp down on budgets, state government information systems managers are having to lobby even harder to get funds for their projects. But IS staff members who attended the Government Technology Conference last month, primarily those from the western states, said they have found new ways to justify their requests.

"The budget crunch makes it really tough for government to continue to train people [in computer use] at the pace they previously did," said Robert Graves, director of the conference, which drew about 12,000 users to the California state capital. "If you're going to try to bring new technology in-house, you have to show how it will fit into the existing budget and how it will increase services while decreasing future costs."

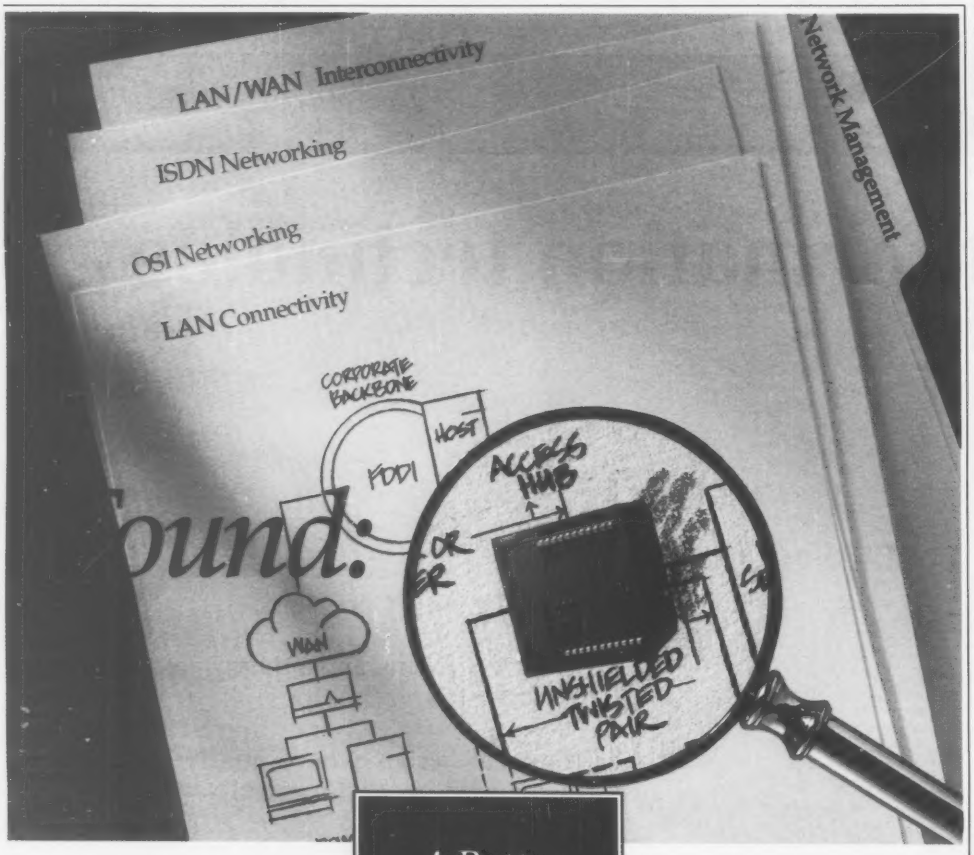
The state of California, for which many of the conference attendees work, is planning an across-the-board budget reduction of nearly $13 billion. In such an environment, attendees noted, it is increasingly hard to justify major expenditures for systems that will take several years to provide benefits.

Some new factors, such as increased spending for drug prevention and mandates to eliminate many clerical jobs, have allowed IS managers to develop new systems, with many of those systems requiring proof of near-term benefits.

More than a dozen new systems used by California, Nevada and other western states were demonstrated. One, a traffic-violation tracking system funded by the Los Angeles Municipal Court, uses digitized images of paper citations to reduce personnel costs.

Another, a mainframe-based expert system developed by Napa County and the state of California, streamlines the application process for welfare recipients. Both systems are going into production this summer.

Sometimes, the systems pay for themselves. The city of Inglewood, Calif., which uses handheld personal computers to read water meters and desktop PCs to collect the information, is selling its utility billing system to other cities. Inglewood already recouped some of the development costs for a 3-year-old traffic citation tracking system that it sold to several neighboring municipalities, including Torrance and Compton.



A Better Networking Solution

Access Hub 132 puts you in control.

Your search for advanced LAN connectivity has just taken a turn for the better. Introducing Access Hub 132, Gandalf's new cost-effective wiring concentrator with integral bridging.

Cost-effective, because you can join a variety of LAN devices with existing unshielded twisted pair wiring using the 10BASE-T Ethernet* standard and its assured interoperability.

Cost-effective, because you can combine sophisticated components into a highly modular system–regardless of the media you choose.

Cost-effective, because you can make fast and easy moves, adds and changes.

Access Hub 132 also features OSI and SNMP network management. As your information systems evolve, Access Hub 132 integrates today's and tomorrow's technologies, offering an ideal building block for future networking requirements.

There's greater productivity and less downtime, with hot-standby power… Distributed Repeater Architecture, a unique method of isolating individual stations without affecting others… plus the ability to change modules without disabling your LAN. And, we back up every Access Hub 132 installation with a responsive nationwide sales and support network.

Access Hub 132. It's everything you should expect from an industry leader offering over 20 years' of proven global communications experience. Call today and help make your network vision a reality: *1-800-GANDALF, EXT. #02.*

gandalf
Open Networks for Open Minds

LAN • LAN-WAN • ISDN • OSI • LAN • LAN-WAN • ISDN • OSI • LAN • LAN-WAN • ISDN • OSI • LAN • LAN-WAN • ISDN

Ethernet is a registered trademark of Xerox Corporation.

NYSE hour challenges IS

BY ELLIS BOOKER
CW STAFF

NEW YORK — Now that the New York Stock Exchange (NYSE) has won regulatory approval to extend its trading day beginning June 13, it will be up to the exchange's information systems department to make sure the software and hardware are up to the task.

Yet the Securities and Exchange Commission's approval of a one-hour extension at the NYSE is a far cry from a global, 24-hour trading environment. For that to happen, according to experts, major changes will be required in worldwide financial procedures as well as technology.

OLTP systems needed

"Although certain aspects are computerized, current trading systems still depend on batch processing of orders after a trading session is over," said Shyam Sunder, a professor of management and economics at Carnegie Mellon University in Pittsburgh.

Sunder, who heads the university's Laboratory for Market Design, said that for trading to occur continually, on-line transaction processing systems would be required at the world's exchanges.

Even so, Sunder said he believes such technical obstacles take a back seat to regulatory and procedural ones.

While many institutions have agreements on electronic funds transfer, "there is no unified system for transferring money, no international standard," Sunder said.

NYSE IS officials were unavailable for comment on what, if any, reprogramming will be needed to support the extended-day test.

Since 1976, the NYSE has had an electronic order processing and post-trade system called Superdot, which today handles about 75% of the orders at the exchange.

Commencing June 13, the NYSE will have two concurrent after-hour sessions each day, beginning at 4 p.m.

In a world
where most modems
are created equal,

something unique
has just arrived...

CALENDAR

The Center for Integrated Manufacturing Decision Systems will hold its annual conference at Carnegie Mellon University in Pittsburgh July 24-25.

Speakers will include Hal Edmunson, Hewlett-Packard Co.'s vice president of manufacturing; William Hanson, Digital Equipment Corp.'s vice president of logistics; and Regis Petrosky, Westinghouse Electric Co.'s head of quality systems assurance.

For information or to register, contact Carnegie Mellon University, Pittsburgh, Pa. (412) 268-8818.

JUNE 23-29

Structuring Business Partnerships for Competitive Advantage. Laguna Niguel, Calif., June 23-25 — Contact: AMR International, Inc., Greenwich, Conn. (203) 661-0101.

Test Engineering Conference. Atlanta, June 24-27 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

Scoop East Conference. East Rutherford, N.J., June 24-27 — Contact: Bob Daniels, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

International Windows 3.0 Developers Conference. Santa Clara, Calif., June 24-28 — Contact: Andree Fontaine, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

Taking Control of the Future: The Role of Information Management in Business Reengineering. Nashville, June 25 — Contact: Lisa Gibson, Computer Corporation of America, Cambridge, Mass. (617) 492-8860.

Micro '91: Auditability, Security and Productivity of Micro-based Systems. Boston, June 25-27 — Contact: Pamela Bissett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

Multimedia '91. London, June 25-27 — Contact: Arielle Maniquet, NGA, London, England (011-44) 081-742-2828.

PC Expo. New York, June 25-27 — Contact: Mark A. Haviland, Bruno Blenheim, Inc., Englewood Cliffs, N.J. (201) 569-8542.

Independent Computer Consultants Association National Conference. Seattle, June 27-29 — Contact: Carolyn Karelitz, Independent Computer Consultants Association, St. Louis, Mo. (314) 997-4633.

JULY 7-13

Datapoint Users Group Meeting. Orlando, Fla., July 7-10 — Contact: Datapoint Corp., San Antonio, Texas (512) 593-7910.

OSF/Motif Graphical User Interface Toolkit: Fundamentals and Application Development. Los Angeles, July 8-10 — Contact: UCLA Extension, Los Angeles, Calif. (213) 825-1047.

International Conference and Exhibits on Failure Analysis. Montreal, July 8-11 — Contact: ASM Member/Customer Service Center, ASM International, Materials Park, Ohio (216) 338-5151.

Structured Development Forum. Portland, Ore., July 8-11 — Contact: Software Association of Oregon, Beaverton, Ore. (503) 690-1395.

National ISDN — Working Together to Make It Happen. Washington, D.C., July 9-10 — Contact: Barbara Kaufman, Bellcore, Livingston, N.J. (201) 740-4324.

Engineering Workstations Conference. Boston, July 9-11 — Contact: EWC, Santa Monica, Calif. (213) 450-0500.

Geographic Information and Spatial Data Exposition. Washington, D.C., July 9-12 — Contact: Gisdex, Silver Spring, Md. (301) 445-4400.

Sony Government Technology Exposition. Washington, D.C., July 10-11 — Contact: Sony Business and Professional Group, Montvale, N.J. (800) 877-7669.

APICS 1991 Total Manufacturing Performance Seminar. San Diego, July 10-12 — Contact: APICS Meeting Registration, Falls Church, Va. (703) 237-8344.

JULY 14-20

Guide 80. Boston, July 14-19 — Contact: Guide Headquarters, Chicago, Ill. (312) 644-6610.

American Association for Artificial Intelligence National Conference on Artificial Intelligence. Anaheim, Calif., July 14-19 — Contact: AAAI-91, Menlo Park, Calif. (415) 328-3123.

TQM '91 Conference. Washington, D.C., July 15-17 — Contact: Paula Harrington, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-0777.

Communication Networks West Conference and Exposition (Comnet West). San Francisco, July 15-18 — Contact: IDG Conference Management Group, Framingham, Mass. (508) 879-6700.

Video Expo. Chicago, July 15-19 — Contact: Debbie Rotolo, Knowledge Industry Publications, White Plains, N.Y. (914) 328-9157.

Computer Technology and Military Planning Symposium and Exhibition. Arlington, Va., July 16-18 — Contact: Automated Missions Planning Society, Palmyra, N.J. (609) 829-7823.

Information Engineering/RAD. Washington, D.C., July 16-18 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8306.

International Conference for Young Computer Scientists (ICYCS '91). Beijing, China, July 18-20 — Contact: Yongchun Liu, Cad Laboratory, Academia Sinica, Beijing, China. Fax: (011 86 1) 2567724 or 2568152.

JULY 21-27

IPO Quarterly Meeting. Pittsburgh, July 21-26 — Contact: National Computer Graphics Association, Fairfax, Va. (703) 698-9600.

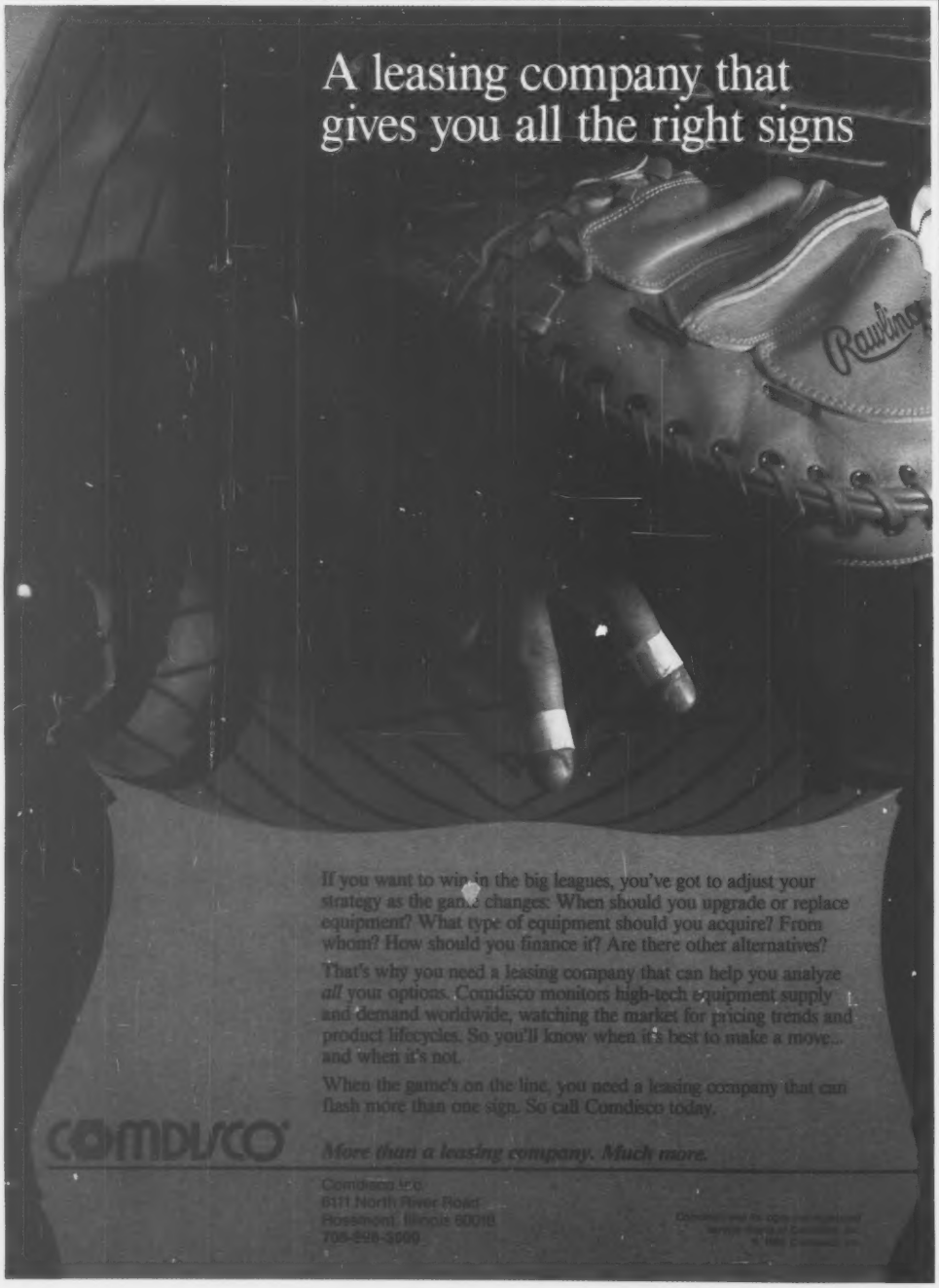
Remittance and Document Processing Forum and Exposition. Anaheim, Calif., July 21-24 — Contact: Recognition Technologies Users Association, Boston, Mass. (617) 426-1167.

IRM '91. Beaver Creek, Colo., July 22-24 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Mactivity '91: The Macintosh Connectivity Conference. Santa Clara, Calif., July 23-25 — Contact: Winehouse Computer Co., Los Gatos, Calif. (408) 345-2500.

Software World. Toronto, July 23-25 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0526.

Artificial Intelligence and the Help Desk. San Francisco, July 23-26 — Contact: Help Desk Professionals, Colorado Springs, Colo. (719) 531-5138.



...Announcing
a new modem
so flexible,
it will change your mind forever
about modems.

Visit us at ICA Booth #2412

Borland's Paradox. Grasp the power of the new standard

Paradox® is now the recognized standard against which all other databases are measured. A database that is as powerful as it is easy to use. That's why Paradox has won virtually every database award since its introduction. Including Best Programmable Database for both single-user and multiuser environments (*InfoWorld*, November 1990), the #1 SQL Front End (*NSTL*, February 1991) and Editors' Choice (*PC Magazine*, May 1991). Now you can grasp all of the power that Paradox offers.

Power Without Pain

Paradox's legendary combination of power and ease-of-use has made it the standard for applications developers and users alike. Paradox comes with a full-blown development language, PAL,™ for building custom database applications. Plus features such as Query By Example, multi-table forms and reports, and presentation-quality graphics that make Paradox the #1 choice of database users.

Extend Your Reach! Paradox Engine and Paradox SQL Link

Paradox® Engine provides C, C++ and Pascal programmers with an Application Programming Interface (API), so your programs can access Paradox data in both single-user and multiuser environments. And with Paradox® SQL Link users can access remote data stored in SQL servers.*

dBASE† Owners! Grasp Paradox RISK FREE for only $175

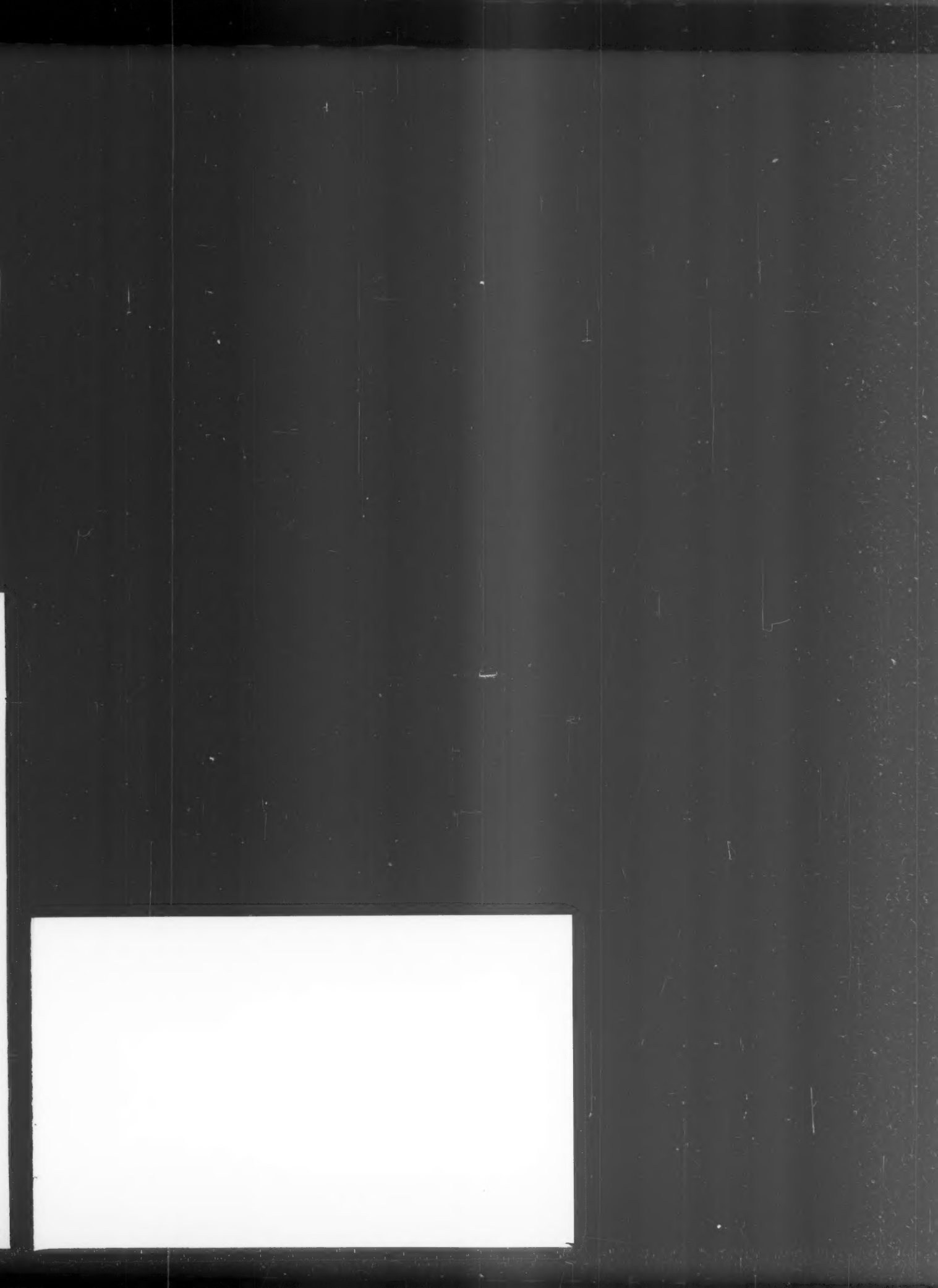
If you own any version of dBASE,® you can upgrade to Paradox 3.5 for only $175. That's a substantial savings off of the $795 list price. And you get a 60-day, money-back guarantee. Risk Free. Paradox even reads and writes dBASE files for integration into your existing environment. Order today. See your dealer or call now at **1-800-331-0877**.

BORLAND

Software Craftsmanship

CODE: ME84

*Microsoft, SYBASE, IBM, Oracle and DEC Rdb/VMS servers supported now. Paradox SQL Link ($495 list price, sold separately) and Paradox 3.5 are required to make the connection with SQL servers. Paradox Engine is sold separately. †Offer also valid for owners of R:BASE, DataEase and FoxPro. Upgrade offer expires 10/31/91. Pricing is in U.S. dollars. Offer good in U.S. and Canada only. Copyright © 1991 Borland. BI 1412



Linking databases: Many paths

BY ALAN RADDING
SPECIAL TO CW

Users don't care whether data resides in old IMS hierarchical databases, VSAM files or new relational databases or whether it's scattered among mainframes, minicomputers, personal computers or local-area networks. They just want transparent, real-time, on-line access and update capabilities. Now.

"It sounds simple," says Dick Nelson, vice president of the agency department at New York Life Insurance Co. "But when you start to peel back the layers, it isn't simple at all."

To handle the different formats, data structures, methodologies and other problems that bedevil efforts to integrate databases, information systems organizations are taking several different approaches.

For the past two years, for example, New York Life has used a "rapid prototyping" approach, piecing together database management systems from available components and enhancing them in each subsequent iteration.

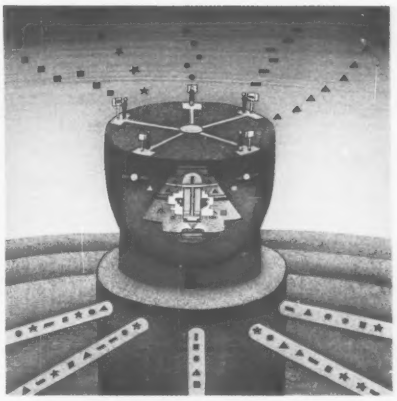
By contrast, Frito-Lay, Inc. has followed a careful process of data modeling that lets users access a variety of databases without knowing about underlying data structures or the retrieval process.

According to Mark Jankowski, chief information officer at Pepsi Foods International, which owns Frito-Lay, PC users at the Dallas-based firm can now access data though a simple point-and-click, Microsoft Corp. Windows-based interface.

"The user just asks about, say, Doritos in the Southwest. We built a back end that finds the data and puts it into the user tool," Jankowksi explains.

Public Service Company of Colorado prefers a methodical, classic approach: Begin with detailed enterprise modeling and progress to companywide data administration.

"We are working on a five-year plan to make end users more self-sufficient," says Chuck Wolff, data and security administration manager at the Denver-based nonprofit company. "We'll move as fast as technology will allow without compromising mission-critical systems. But the users want it all right now."



James Endicott

The three companies exemplify popular tactics now being used to integrate disparate databases. Besides rapid prototyping and data modeling, software "gateways" between databases and standard access languages such as SQL are also being used to help organizations make optimum use of corporate data. But all of these approaches have their drawbacks.

"It's like people who speak different languages," Nelson says. "You have to use an interpreter between them, but even then, whenever you interpret, the fine nuances get lost."

Despite any shortcomings, many large organizations appear undaunted. A *Computerworld* survey in 1990 showed that the desire to get better access to corporate data was the most common reason for undertaking an integration project. Nearly 95% of respondents said they were working to permit sharing of databases and applications.

The sheer importance of getting key marketing, financial, manufacturing and other kinds of data to the far

Continued on page 94

London Life insures info access

New LAN will permit wider, faster access to IBM and DEC databases

INTEGRATING DATABASES

London Life Insurance Co.

BY JANET MASON
SPECIAL TO CW

London Life Insurance Co. is hoping to insure its bottom line by opening integrated IBM and Digital Equipment Corp. databases to local-area network users.

The $10 billion London, Ontario-based insurer is in the final stages of a downsizing and integration project that will link personal computer users at headquarters with 150 sales offices by the end of the year.

When work is completed in December, users will be able to access DB2 on an IBM 3090 and RDB on 12 DEC Microvax servers via a DEC Ethernet, according to John Thompson, manager of data administration at London Life.

The project is a key part of a plan to boost London Life's market share by 25% over the next five years, according to Thompson. "We are using IS to support an increasing number of sales people," he explains, "and to help the company target-market its products."

The 116-year-old firm specializes in individual life insurance policies and also offers group life and health insurance plus investment products. A unit of London Insurance Group, the firm has 5,500 employees.

The client/server system replaces an 11-year-old dumb terminal link to the IBM 3090.

"Not everyone had access to the dumb terminal system because of the mainframe transfer charge expense," Thompson says.

Now, because users will have immediate access to information on both the RDB and DB2 systems, "they will be able to respond more quickly — at least by several days — to the needs of policy owners and new customers," he says.

Greg Phelan, a London Life end user who assisted in the development of one of the company's applications, says data access is already much faster. "Download time is now several minutes, whereas with the dumb terminal, we spent all afternoon doing it," he says.

Nearly all 300 London Life information systems professionals at the company's headquarters are involved in the project, including a full-time team of 20 database designers, programmers, operations employees, security specialists and data architects.

Developers are currently working on three database projects: a mortgage application, a group sales database based on RDB and a regional office reporting database in DB2 that is

Continued on page 99

Peter Sibbald

Need for speedy *transactions is key, says Thompson, an avid cyclist*

How they did it: A sampling

- **New York Life Insurance:** A "rapid prototyping" approach let the New York City firm piece together an integrated sales agent system and then enhance it in subsequent iterations.
- **Roadway Express:** The payoff of a methodical, five-year data modeling process is that users at the Akron, Ohio-based trucking firm can access up-to-the-minute information on customers, shipments, trucks and drivers anywhere in North America.
- **Frito-Lay:** The Dallas snack foods vendor employs a process of data modeling that lets users access a variety of databases without knowing about underlying data structures or the retrieval process.
- **Public Service Company of Colorado:** The Denver-based nonprofit utility began with detailed enterprise modeling and progressed to companywide data administration.
- **National Grocers:** Data modeling helped this Toronto service firm create an integrated "universal production planner" database system that helps 150 users collect information on product sales.
- **Textron Financial:** Officials at the Providence, R.I., company decided that the best approach was to re-engineer the entire business process and give users local-area network access to customer, billing and collections databases.
- **Executive Re:** This 4-year-old Simsbury, Conn., reinsurer had the luxury of starting with a clean slate and built-in database integration from the start.

Continued from page 93

corners of the organization makes it a certainty that interest in database integration will remain high for some time.

"You don't want the business to be bound by the organizational structure, which can create artificial divisions of labor," says Robert Davoli, president of SQL Solutions, Inc., a Burlington, Mass.-based consultancy and systems integrator.

The following is a detailed look at several popular approaches that are used to integrate databases.

Rapid prototyping

While the sudden availability of database access tools — such as those offered by Microsoft Corp., Gupta Technologies, Inc., Software Publishing Corp. and others — encourages rapid prototyping, it nonetheless remains the road less traveled by many information systems organizations.

Rapid prototyping is a process of developing applications in a succession of small phases. Each phase brings new functionality and improvements over the previous phase. Advocates say the approach eliminates the need for comprehensive requirements planning and definition at the project's outset.

At New York Life, a high-level vision rather than a formal business model guided the process, Nelson says. "[We said], 'Here's how agents will work in the future.' Developers then came back with some ideas for implementing the vision by incorporating existing systems, applications and data."

The goal was to create a usable "integrated agent system" as quickly as possible, explains Shirley Singleton, vice president of cooperative processing at Logica Data Architects, a Waltham, Mass.-based systems integrator that worked with New York Life.

The strategy boiled down to using "a plug-and-play architecture where we can pull out one database and software and plug in another," Singleton explained.

Developers created an integrated sales system consisting of 14 different pieces of applications software, each with its own database.

The system follows the sales process from customer prospecting through applications processing and underwriter approval, building the customer database as it goes. A variety of software gateways and other tools pull data from several databases to provide a complete view of the customer.

Data modeling was limited to working out inconsistencies in Dbase III files and various flat files and on the corporate mainframe.

A prototype system for field testing was introduced in May 1989, six months after the firm gave the go-ahead. Since the initial rollout, New York Life has released five more improvements to the existing system and is testing a sixth.

Nelson says he is sold on rapid prototyping. "You can get so wrapped up in business models that you never get anything done," he says of traditional approaches. "It's an excuse for not doing anything."

Besides being quicker to develop than a model-bound system, rapid prototyping eliminates duplicate data, Nelson adds, and eliminates the need for the agent to rekey data, thus saving time and reducing errors.

Singleton agrees, saying the biggest problem with enterprisewide modeling is that technology can become obsolete by the time the system is completed. "Some data modeling is critical," she says, "but we avoid the all-encompassing corporate data model. It's too slow, and technology is moving so fast."

Nelson advises companies interested in rapid prototyping to follow some commonsense guidelines: Have a clear vision of long-term goals, express that vision in business terms, communicate clearly, start small and show results quickly, manage expectations, and don't neglect training and support.

Despite successes like those at New York Life, rapid prototyping isn't for everyone, warns Mike Hawotte, director of systems integration at Chicago management consultancy A. T. Kearney.

"You can buy a tool that provides access, and it will work in a company in which the information is there and users just need better access," Hawotte says. "But what about cases where the data isn't right?" In such instances, he says, data modeling may be a better choice.

"There are no real products that provide a canned solution," Jankowski adds. Despite the claims of some vendors rushing database access products to market, an organization must be prepared to use a variety of tools and still write pieces of code to fill in the gaps, Jankowski says.

Data modeling

A more conventional approach to integrating databases is data modeling. In this paradigm, a data model describes all of the data and the relationships between data. The model also identifies redundant data and describes the processes that generate the data.

The approach has been used successfully by Roadway Express, Inc. The Akron, Ohio-based trucker gives users access to up-to-the-minute information on customers, shipments, trucks and drivers anywhere in North America.

Users at headquarters or any one of the company's 600 terminals access local Informix Software, Inc. databases, a central corporate strategic database built on Computer Corporation of America's M204 technology and a human resources database built around IBM's DB2.

Davoli says *to avoid artificial divisions of labor*

Getting to this point took a five-year effort that began with extensive enterprise modeling. "The first thing we had to do was sit down and create a companywide data model and architecture," says Gerry Long, vice president of Summit Information Systems, Roadway's IS subsidiary.

The company had skipped the data modeling phase on an earlier project and wasn't prepared to make the same mistake again. "Anytime the business changed, we had to rewrite," Long says. "Without modeling the business processes and data, you spend 80% of your time on maintenance."

Consultants were brought in to help create the data model, which describes the data in business and technical terms, definitions, users, origin and physical characteristics. The technical staff then converted the data model into the physical database design and built user interfaces and back-end systems to access the data.

Today, Roadway officials say they believe better information access differentiates the company from its competitors while helping customer service, quality and productivity.

"Customers get status reports quicker, billing accuracy improved, and we've been able to develop a whole new set of services," Long says. For instance, Roadway provides advance notice of shipments and can even ship retail goods that are already on hangers. Drivers can be located quickly and customer records checked faster than before. The company is presently expanding the system into Europe.

The importance of good modeling is affirmed by Carl Fitch, senior manager at CAP Gemini America in New York. "Before throwing data access tools at a problem, the data must be right. You have to identify where differences [in data] exist."

Changing bad to good

The experience of National Grocers Co. in Toronto suggests that even a bad data model can be made to work.

Earlier this year, the firm rolled out an integrated "universal production planner" database system to assist some 150 users in the collection of information on the thousands of products sold in the stores from a variety of inventory, distribution, purchasing and pricing systems. The data is used to help plan promotions, set sale prices and create advertisements.

Data resides on a variety of old mainframe and minicomputer systems: Wang Laboratories, Inc., VSAM, IDMS databases and a new DB2 system.

To improve access, National Grocers undertook a massive data modeling effort in early 1990. "The scope was huge. It touched on almost every aspect of the business," says Michael King, manager of microcomputer systems development at National Grocers. The goal was to "rationalize data coming from a bunch of different places and funnel it through a single point.

"The data could be in three or four different places," King says. National Grocers is trying new tools, such as Gupta's SQLaccess, SQLwindows, SQLhost and SQLgateway, to gain access to multiple databases, but it is finding that performance is too slow.

"We need to go back and tune the applications, the databases, the network and the windows," King says. "Basically, we overnormalized our data design. Now we have to put in redundant data to make it run faster. In some cases, we're doing four- and five-table joins, and the system really grinds."

Craig Lashmet, manager of information technology at Grant Thornton, a St. Louis-based accounting and systems consulting firm, says the problem was that National Grocers "conceived the data model without relational in mind. All the tools in the world won't help if the data model is off." The consultancy is now rewriting parts of the system.

However, King adds, even slow access

is better than none. "Before, the merchandising guys were doing everything on paper . . . Now they can spend their time thinking about merchandising."

Re-engineering

Textron Financial Corp. took a different tack to provide users with access to company databases, says Paul Hamel, vice president of systems and planning. The firm found itself with host-resident DB2 databases, VSAM files and a proliferation of geographically dispersed local-area network-based Sybase, Inc. databases accessed through SQL Server.

"There is more to providing [database] access than just putting in a gateway," Hamel says. "You need an application design and architecture. It doesn't work to just try to graft something together."

With that knowledge, "we made a decision to re-engineer, rebuild from the ground up, deciding what information goes where," Hamel says.

The effort was part of a larger downsizing strategy that moved the company into client/server computing. To this end, Textron redesigned both host- and LAN-based applications to allow easy user access. For instance, Hamel explains, "We had to redesign applications to minimize the need for two-phase commits." That ensures the integrity of data in distributed databases, but it is difficult to achieve across multiple databases.

Today, Textron users routinely call up information on customers, billing and collections without knowing or caring about the location of the information. The system handles logging into and out of different databases.

The databases serve production and transaction applications such as billing, collections and customer information. Users not only query but also update the various databases in real time.

The bottom line, according to Hamel, is increased productivity. At the Minneapolis pilot site, agents realized 100% productivity gains, he claims.

Start fresh

Executive Re, Inc. in Simsbury, Conn., a reinsurance company, took what may be the easiest way to integrate databases: It started with a clean slate.

James Roberts, senior vice president of IS and administration, says the 4-year-old company was not encumbered by existing systems and applications, so he could build a system using one set of tools.

His first multiple database application, an underwriter workstation, let users access information from a pricing database and a claims database.

Keeping things simple is key, Roberts says. He faced different databases on different machines, but, he says, "They were both developed with the same front-end [graphical user interface]: Gupta's SQLwindows."

Roberts quickly built an enterprise model using Linc Systems' Extended Relational Analysis methodology. "It wasn't a complete model, but it was sufficient," he notes. He got enough to map out an entire application architecture.

Roberts says he limits users to predefined data and formats. Eventually, he says, he will allow users to roam freely, but "not until the access tools evolve to the point where you don't need to understand the database structure." ●

Radding is a free-lance writer based in Newton, Mass.

After the project, new questions

Headaches don't end with successful database integration — new ones begin.

Like many organizations, Public Service Company of Colorado discovered that sticky issues arise after the technical details are smoothed out. The debate centers around what users can access in the Denver utility's Datacom and DB2 production databases.

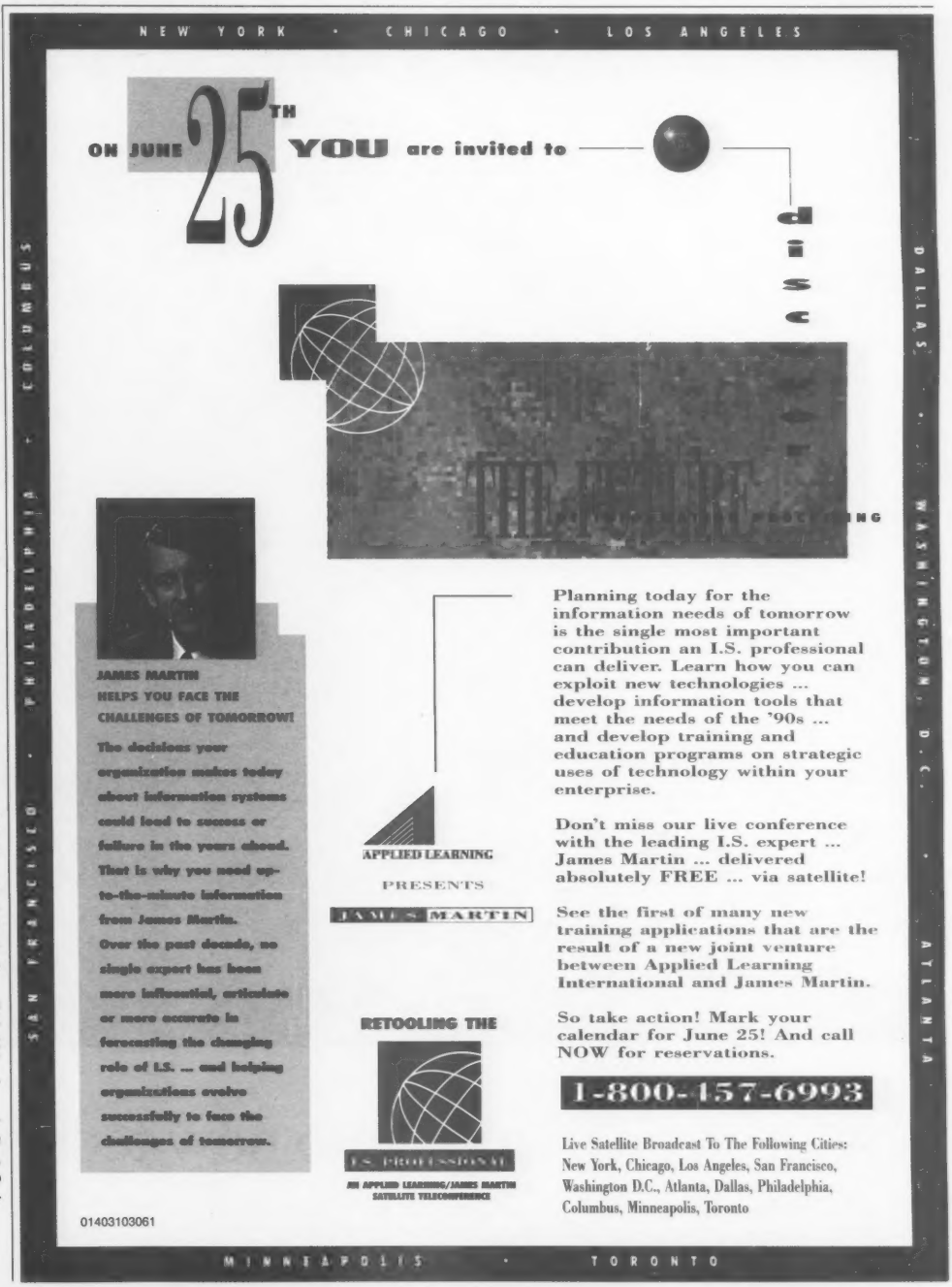
Dawn Sudmeier, manager of IS, argues that users should be able to freely access some of the company's production databases. "If you are going against a 2 million-customer database, there can be problems. But there's a difference between that and going against a 6,000-employee database."

Sudmeier says she is confident that controls built into the system will shut down a query that starts to run wild.

However, Chuck Wolff, the company's data and security administration manager, says he worries about the impact of ad hoc SQL queries by end users. "You can't have user access impacting mission-critical production systems."

Wolff and Sudmeier differ about how to best handle potential problems. Wolff wants to store extracts of the data in a separate relational database that users can access using PC-based SQL tools.

Sudmeier says that if performance is the obstacle, a library of pretested queries should be created as an alternative to creating another database for users. Users can execute these, confident that they won't bog down the system, she says.



Before you plunge into new technology, make

Business Partner

When your company invests in Computer-Aided Software Engineering (CASE), an experienced supplier is critical to your ability to move quickly and efficiently to full productivity. With over 50,000 products sold, KnowledgeWare is the industry leader. Our integrated, methodology-independent tools offer a full life-cycle solution from systems planning through automatic code generation. Our experienced support team can help

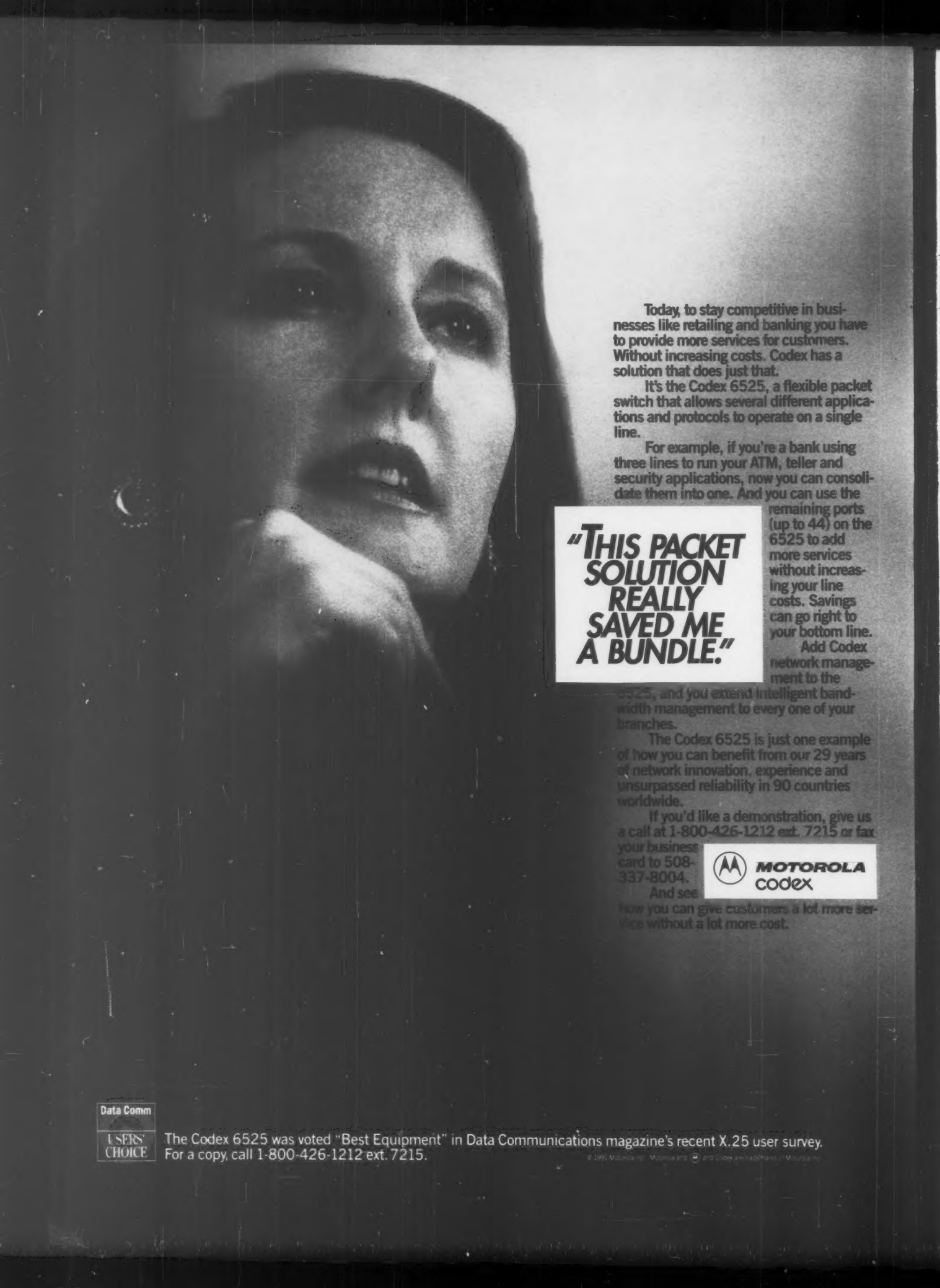
KnowledgeWare
CASE

sure you know what lurks beneath the surface.

you successfully implement CASE. The bottom line is more rapid development of quality software applications, and easier ongoing maintenance of those applications as business requirements change. Call 1-800-338-4130 for more information. With a partner like KnowledgeWare, you can make the leap with perfect confidence.

KnowledgeWare®
THE BEST CASE FOR YOUR BUSINESS

IBM is a registered trademark of the International Business Machines Corporation.



Today, to stay competitive in businesses like retailing and banking you have to provide more services for customers. Without increasing costs. Codex has a solution that does just that.

It's the Codex 6525, a flexible packet switch that allows several different applications and protocols to operate on a single line.

For example, if you're a bank using three lines to run your ATM, teller and security applications, now you can consolidate them into one. And you can use the remaining ports (up to 44) on the 6525 to add more services without increasing your line costs. Savings can go right to your bottom line.

Add Codex network management to the 6525, and you extend intelligent bandwidth management to every one of your branches.

The Codex 6525 is just one example of how you can benefit from our 29 years of network innovation, experience and unsurpassed reliability in 90 countries worldwide.

If you'd like a demonstration, give us a call at 1-800-426-1212 ext. 7215 or fax your business card to 508-337-8004.

And see how you can give customers a lot more service without a lot more cost.

MOTOROLA codex

Data Comm USERS' CHOICE

The Codex 6525 was voted "Best Equipment" in Data Communications magazine's recent X.25 user survey. For a copy, call 1-800-426-1212 ext. 7215.

© 1991 Motorola Inc. Motorola and Ⓜ and Codex are registered trademarks of Motorola Inc.

Continued from page 93
connected through RDB.

Although still in the testing stages, the downsizing and integration effort has already paid for itself, Thompson says. "By delaying an $8 million mainframe upgrade, we shifted our spending to LANs and expanded the number of end users who have access to the information," he adds.

The database integration is scheduled to be completed by August.

Conserving customers

Conservation specialists — those who conserve the company's customers — use the system to develop more efficient retention methods.

Actuaries combine databases such as rates and mortality to calculate prices. Sales representatives use a sales illustration application to access data from cash value, premium and dividends databases.

By December, some 500 PCs will be installed. In five years, 85% of the 2,000 headquarters-based employees will have PCs, Thompson says.

Besides savings in mainframe upgrades, London Life says it is also enjoying big savings on individual applications.

For example, annual maintenance costs for a customer retention system were slashed from $87,000 (U.S.) to about $2,600 (U.S.), Thompson says. The savings stem from the use of the PC network, avoiding expensive mainframe transfer charges and the update to DB2, he says.

The system also removes the need for users to re-key information from one database to another, and in addition, it reduces staffing from two full-time clerks to one part-time position.

Thompson attributes the increased effectiveness in part to the upgrade to DB2. The previous system was based on the IBM 3090's DL-1 database.

"We decided to use DB2 because it is more flexible and easier to use than DL-1," an older IBM product, Thompson says.

The data manager — a software component of DB2 — decides how the data should be accessed, he says.

"This allows the end user to access the data directly without the assistance of a programmer," Thompson explains.

RDB proves its worth

With the move to DB2, the company also began investing in DEC's RDB databases. "DEC proved to be competitive, price-wise," Thompson says.

"At the time, IBM was promoting its System/36, which didn't offer nearly the amount of capabilities that DEC did," he says. London Life also decided to use DEC PCs because of a 20% price advantage over IBM.

PCs in the system use Borland International, Inc.'s Paradox. "We had been using Paradox in a stand-alone environment for four or five years before we decided to use it on the LAN," Thompson says.

"When we compared it to Oracle, Dbase and Microrim, we found that it was considerably less expensive and didn't require as much memory to run.

"The interface functions to accept standard SQL requests — which communicate the data to the VAX — and then ships the results back to the application," Thompson says.

According to Phelan, who is a conservation specialist, "The inner workings of the communications software is invisible with Paradox, and its menus and function keys make it user-friendly."

While the multivendor environment has not posed any drawbacks, Thompson says, he would like to see DEC get more third parties to support SQL services. •

Mason is a free-lance writer living in Philadelphia.

Close-up

Organization: London Life Insurance Co.
Goal: Slash mainframe costs and increase market share 25% by offering faster and better data access.
Strategy: Offer LAN users access to integrated IBM DB2 and DEC RDB databases.
Payoffs: Downloading time cut from hours to minutes; $8 million in mainframe upgrade savings.

tech specs

At present, 200 networked PCs — Digital Equipment Corp. 316 and 325 SXs — are installed at London Life's Toronto headquarters. Each networked PC uses Paradox from Borland International, Inc. to access the DB2 and RDB databases.

Paradox translates the user's request into DEC's SQL services interface. The interface then accepts standard SQL requests, which communicate the data to the VAX, and then ships the results back to the application.

The PCs use DEC's Pathworks 4.0 PC integration software to link with the 12 Microvax 3100 servers, which in turn connect with the IBM 3090.

The Microvaxes use a DEC software product called Vida for DB2 server. Vida uses a language that is understandable by MVS and accesses the IBM 3090 on an LU6.2 communications session. Vida then operates as an application under CICS on the IBM mainframe.

JANET MASON

Multivendor demo planned

A consortium of leading database software and hardware companies will give what it says is the first demonstration of multivendor database interoperability next month.

The SQL Access Group, a 40-member nonprofit consortium that includes Borland International, Inc., Digital Equipment Corp., Novell, Inc. and Oracle Corp., says it will demonstrate multiple clients and database servers exchanging information in a "simulated, real-world environment."

Group officials say the announcement caps 18 months of research and represents "a first step" toward offering users true database interoperability.

The group also announced that the technical specifications underlying the demonstration will be published by X/Open Consortium Ltd.

These definitions include an embedded SQL definition for application portability and Open Systems Interconnect remote database access for database interoperability.

Founded in 1989, the SQL Access Group develops technical specifications to let multiple SQL-based relational databases and tools work together. It is based in Santa Clara, Calif.

SUSAN NYKAMP

USING DISPLAYWRITE/370?

Try EdWord®. Your users will thank you.

- Easy to learn and use
- Pull-down menus
- English-language commands
- IBM AFP, Xerox, PostScript, & HP LaserJet printer support
- PROFS & OfficeVision integration
- WYSIWYG display
- Read & write DCA/RFT files
- Unlimited document size
- CICS, TSO, CMS, ROSCOE

For more information, call Tom Cox at:

800 367-8729
(800 FOR-TRAX)

5840 Uplander Way I Culver City, CA 90230-6620 I FAX: 213 649-6200

EdWord is a registered trademark of Trax Softworks, Inc. Other products are trademarks of their respective owners.

Trax Softworks, Inc.

EXPERT SYSTEMS.

EVERYONE IS TALKING ABOUT THEM!

BUT WHAT CAN THEY DO FOR ME?

Call the Experts at Information Builders and find out...

800-444-4303

LEVEL 5

Subaru project aiming to put the right car in the right place

Unisys databases ensure that customers get what they want

INTEGRATING DATABASES

Subaru of America, Inc.

BY MEL MANDELL
SPECIAL TO CW

To boost sales by ensuring that the right car gets to the right customer at the right time, Subaru of America, Inc. has begun the final phase of its biggest information systems project ever.

The automobile company is integrating its 10-year-old Unisys Corp. Mapper database management system with a new Unisys RDMS 1100 relational database. Both reside on a Unisys 2200/623 mainframe installed last year.

"Dealers hate to let an interested customer leave their showrooms," explains John Piccone, Subaru's director of business IS. In the past, he says, "if Subaru couldn't deliver the car the customer wanted on schedule, the dealer would bend over backwards to sell him or her another brand."

To prevent the loss of such sales, the new database will help ensure that dealers get the Subaru they need on time, according to Bill Krewson, manager of information resource management at Subaru's headquarters in Pennsauken, N.J.

Subaru, which is owned by Fuji Heavy Industries Ltd., posted a whopping 317% gain in domestic sales earlier this year. But analysts say the company isn't on easy street yet.

"At a time when the U.S. automotive market is shrinking, Subaru faces formidable competition," says Maryann Keller, an automobile industry analyst at stockbrokerage Furman Selz in New York. She adds that the improved delivery system could help the firm survive tough times.

Making big plans

Company planners are counting on the new system to play a big role in boosting projected sales to 130,000 to 140,000 cars this year, up from 118,000 in 1990.

The database integration, which began in January 1990, is expected to take up to 30 months and 70,000 man hours to complete. Subaru would not disclose how much the project will cost.

When the project is done, the company will be able to allocate 15,000 cars at a time. Subaru says it can now allocate cars to a specific dealer even before they roll off assembly lines in Japan and Indiana and can reassign them as needed.

At present, about 600 of Subaru's 750 U.S. dealers are equipped to access the database via personal computers or terminals to get information such as end-of-warranty dates and to order parts.

Early results seem positive. Will Anderson, assistant sales manager at B&L Subaru in New York, reports "a dramatic improvement" in the quality of information and speed of response from Subaru.

Moreover, company officials say the new system has already boosted the speed and functionality by 50% for company users on 1,700 Unisys PCs. Other payoffs include revamped ordering and invoicing programs and the creation of the company's first sales forecast program.

Mapper's limitations

The earlier version of Mapper currently includes the names of 1.5 million Subaru customers, parts inventory lists and dealer lists. Its main limitation, Krewson says, was an inability to handle large data structures. This meant car data could not be input until the automobiles had already reached the U.S. from Japan, and only then could a car be allocated to a dealer.

Also, once the car was allocated to one of the six U.S. sales regions, it couldn't be reassigned, even if it met the requirements of a customer in another region. This resulted in lost sales.

A lesser but still irritating problem, Krewson continues, was that dealers had incomplete descriptions of the cars before they were delivered. For instance, how was each car accessorized?

None of these was a major factor in the early 1980s, when Subarus were in their heyday and typically sold through Subaru-only dealerships, Keller says. If a given car didn't meet one customer's needs, others were ready to buy it.

However, Piccone adds, as the market shrank, more than half of Subaru's dealers added competitors' brands to their lineups. That made the company's database limitations painfully obvious.

In looking at its options, Subaru's IS group considered a Unix platform and RDBMS but chose to stay with Unisys. The big reason, Krewson says, was "the absolute automatic recoverability of both data and transactions with UDS 1100, the system under which RDMS 1100 operates. The Unix systems couldn't match that critical attribute."

The Unisys Mapper Relational Interface lets RDMS and Mapper talk to each other. Programmers are using the Mapper fourth-generation language to write screens for the new system. Batch and reporting functions are written in Cobol, and SQL is used to access information from RDMS 1100.

Initially, Subaru's IS department had estimated that 12 programmers and analysts could finish the integration in 18 months. According to Krewson, more time is needed for several reasons: Business requirements grew more complex, new code for the planning function had to be written from scratch, and nearly all the other code had to be rewritten.

The integration plan was divided into five phases: planning, ordering, allocation, delivery and invoicing.

The first phase, completed in August 1990, let the company generate sales forecasts for the first time ever.

The ordering, allocation and delivery phases, scheduled to be finished by November, will streamline the distribution process, providing for more detailed orders, national rather than regional car allocation and more efficient delivery.

The final phase, expected to be completed by January 1992, will let headquarters generate complete invoices, says Jim DiMarzio, the internal business systems consultant who managed the project.

Looking down the road, Subaru's IS group is considering integrating other existing databases, including those of parts and service, warranties and dealers, to the relational format. •

Mandell is a New York-based free-lance writer specializing in technology topics.

Nick Kelsh

Krewson (left) *and DiMarzio steer Subaru's database integration project*

Close-up

Organization: Subaru of America, Inc.
Goal: Create a flexible, international car allocation system.
Strategy: Integrate a limited, semirelational database with relational Unisys mainframe product.
Payoffs: 50% boost in database functionality, ability to allocate 15,000 cars at one time.

THE
EXPERT SYSTEM.

RUNS UNDER WINDOWS, IS OBJECT-ORIENTED...

NOW I'M *REALLY* INTERESTED.

Call the Experts at Information Builders and find out how LEVEL5 can work for you...

800-444-4303

LEVEL5

INTERNATIONAL VIDEOCONFERENCE — FREE!

INTERCONNECTIONS/91

Tactical Approaches to Multidiscipline Performance Monitoring in the SystemView Era

Tuesday, June 25
11:30 a.m. - 5 p.m. EDT

This interactive videoconference will bring together MVS professionals throughout North America to discuss the future of the data center. **HEAR** six noted experts on MVS performance monitoring discuss critical multidiscipline issues... **DISCOVER** how other MVS data centers are solving real performance problems...**SEE** firsthand a new approach to performance monitoring analysis and reporting...**GET** your comments heard and questions answered.

The Panelists
Steve Barnes
Tom Bason
Ray Brow
Mark Friedman
Bob Johnson
Jim Wheaton

Simultaneous telecast in the following cities:
Anaheim, CA
Atlanta, GA
Bloomington, MN
Boston, MA
Chicago, IL
Columbus, OH
Dallas, TX
Kansas City, MO
Los Angeles, CA
Mexico City, Mexico
Milwaukee, WI
Montreal, PQ
Nashville, TN
Newark, NJ
New York City, NY
Philadelphia, PA
Raleigh, NC
San Francisco, CA
Tampa, FL
Toronto, ON
Washington, DC

Participation is limited! To make absolutely certain you can attend in the city of your choice, call toll free TODAY: 1-800-227-8911

LANDMARK™

8000 Towers Crescent Drive
Vienna, Virginia 22182-2700
SCWZ391

INSIDE EDGE

The pluses and the minuses of going distributed

BY RICHARD FINKELSTEIN
and COLIN WHITE
SPECIAL TO CW

During the past few years, interest in true distributed database management systems has waned as vendors have failed to come up with the goods.

Today, most organizations are focusing their attention instead on client/server and cooperative processing.

Both of these distributed computing technologies offer several pluses for organizations eager to improve access to shared data. But these potential benefits come with several important and unresolved questions about standards and management. Following is a rundown of the major payoffs and stumbling blocks organizations face.

Pluses

First and foremost, client/server and cooperative processing permit remote access to data. Both allow stand-alone personal computer systems to be connected to local-area network-based environments that support multiuser access to shared databases.

Both approaches can also help solve a problem facing many organizations: accessing data stored in PC spreadsheets, databases and graphics packages. PC and minicomputer-based database servers offer a means of centralizing the data for greater accessibility, reliability and performance.

By storing data in a shared database server rather than in individual PC files, users are free to access common data with a variety of front-end client tools. Direct database server connections from dozens of popular PC packages such as Lotus Development Corp.'s 1-2-3, Microsoft Corp.'s Excel, Borland International, Inc.'s Quattro and Paradox and Dataease International, Inc.'s Dataease and Forest & Trees are now common. Furthermore, database servers minimize network traffic so that very large databases can be consolidated on PCs.

Drawbacks

The move toward graphical user interfaces will increase demand for access to complex data such as graphics, text and images. Unfortunately, there is now no standard way of retrieving, manipulating and maintaining these complex data types. Several DBMS vendors provide support for storing and retrieving large fields known as "blobs." But large storage requirements, coupled with the need for fast data searching and retrieval, are issues that need to be addressed.

The industry is moving toward the use of workstation client tools and applications that access shared databases on PC, minicomputer and mainframe database servers.

One of the key issues in such an environment is that it is likely to involve interconnecting database products from a variety of vendors. The existence of SQL as a standardized data access language encourages greater data integration and connectivity among vendor products. Each DBMS vendor, however, has its own SQL dialect, which adds to the complexity of building transparent links between front-end tools and back-end database servers.

Vendors and users have formed committees to address the problem of standardizing SQL. The American National Standards Institute/International Organization for Standardization (ANSI/ISO) SQL committee, for example, which published the original SQL standard in 1986, is readying a major extension to the standard known as SQL2. This enhanced SQL standard will provide a road map for vendors to follow as they extend their products, but full conformance will take many years to achieve.

Organizations such as ANSI/ISO and the SQL Access Group (see story page 99) are addressing the problem of interoperability among products. Again, it will be some time before this work is complete and vendors provide support. Meanwhile, vendors such as IBM and Apple Computer, Inc. are establishing their own de facto industry interoperability standards.

Management issues

Perhaps the biggest issue facing users of distributed computing is the management of a distributed environment.

If organizations have to dedicate armies of systems administrators to manage the copying, backing up and recovering of shared databases and client software on departmental and LAN-based servers, the cost and productivity benefits of workstation technology will be lost.

The solution is to provide automated tools to perform and control these tasks. Unfortunately, few automated tools exist today.

To succeed in such an environment, developers will need facilities to share information (metadata) among different development tools and control the proliferation of metadata in a distributed environment.

The solution to this is a repository. A repository acts as the master source of metadata for workstation-based tools. For performance reasons, metadata from a repository will usually be extracted and copied to local workstation databases rather than accessed dynamically.

This is much like copying operational data from host-based servers to LAN-based servers for access by end users. The challenge will be to keep workstation-based metadata synchronized with repository metadata and DBMS metadata.

Although many of these new database and applications development technologies have yet to achieve full maturity, there is still considerable advantage to using them. The key to success is understanding their limits and knowing what can and cannot be done with them.

Finkelstein is president of Performance Computing, Inc., a Chicago-based consulting company. White is president of Database Associates International, a database research and consulting company in Morgan Hill, Calif.

"AT FIRST, WE USED LEVEL5 OBJECT TO BUILD EXPERT SYSTEMS.

NOW WE USE IT TO DEVELOP ALL OF OUR WINDOWS APPLICATIONS."

Call the Experts at Information Builders and find out how LEVEL5 can work for you...

800-444-4303

LEVEL5

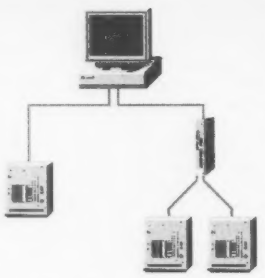
Think about your own LAN for a moment. A complex mix of clients and servers. Hosts and terminals. Bridges and routers. Ethernet and Token Ring.

If you had a shutdown, how long would it take to find the problem? And how much would that downtime cost your company?

With the SynOptics distributed management approach, you can isolate problems in just seconds.

The reason is simple. Visibility. The SynOptics intelligent hub architecture gives you the ability to see exactly what's going on within your LAN—port by port, node by node, in real time.

Our unique auto topology feature will draw a map of your LAN automatically, right down to the port level. So you won't have to worry about your network operator



The SynOptics Approach to Managing Networks. Hubs gather, analyze and reduce LAN information at the source. In larger networks, Network Control Engines offer even greater control capabilities.

SynOptics Communications, Inc., 4401 Great America Parkway, P.O. Box 58185, Santa Clara, CA 95052-8185. © 1991 SynOptics Communications, Inc. "The Hub Of Client/Server Computing" is a trademark of SynOptics Communications, Inc.

Yesterday's LAN Shutdown Could've Cost A Thousand Dollars A Minute. And It Could've Been Any Of A Thousand Causes. All LAN Problems Should Be So Easy To Solve.

disconnecting the wrong device. And you can zoom in and inspect LAN activity as events happen.

All this information is presented through an innovative graphical user interface—crystal clear and actionable.

All this works because our network management system was designed from the ground up to provide a systematic way to manage change in your LAN. Add in our innovative technology, and there is simply no better way to build LANs.

And because your LANs don't stand alone, SynOptics implements industry-standard protocols such as SNMP, and integrates them into your host management environments—including IBM NetView.™

To get a free informational video, call 1-800-544-1340. We suggest you do it soon. You don't have a minute to waste.

SynOptics

The Hub Of Client/Server Computing.™

Other brand and product names are trademarks or registered trademarks of their respective holders.

F.Y.I.

SQL Solutions, Inc. announced new client/server-based gateways for VMS and Unix. The Burlington, Mass., systems integrator, a **Sybase, Inc.** subsidiary, says the products can link relational database management systems from Sybase, **Oracle Corp.**, **Digital Equipment Corp.**, **Ask Computer Systems, Inc.** and **Informix Software, Inc.** Prices range from $5,000 to $60,000.

•

New connectivity software from **Gupta Technologies, Inc.** in Menlo Park, Calif., lets users of its SQLwindows applications access data from **Microsoft Corp.**'s SQL Server. The cost is $1,995. A connectivity kit for existing SQLwindows users is $995.

•

Also under development by Gupta are gateways to **IBM**'s OS/2 Extended Edition Database Manager, **Hewlett-Packard Co.**'s Allbase/SQL and **Informix Software**'s RDBMS.

•

Oracle has named Houston-based **Business Systems Group, Inc.** a preferred systems integrator. The 4-year-old systems integrator is also the first Oracle Authorized Education Center outside of Oracle.

•

Version 1.1 of Paradox SQL Link from **Borland International, Inc.** adds a link between Paradox 3.5 and **Sybase's** SQL Server. Working under Unix or VMS, the new version includes connections between Paradox and database servers offered in the previous release. The cost for SQL Link 1.1 is $495; the upgrade version is $99.95. By year's end, Borland says, it will offer SQL Link support for **Tandem Computers, Inc.**'s upcoming SQL Server Gateway, **IBM**'s DB2 via Micro Decisionware and **Novell, Inc.**'s Netware SQL.

•

Separately, the Scotts Valley, Calif.-based firm promised a Dbase compiler for **Microsoft**'s Windows that will work with Paradox Engine. Called Turbo Xbase, the product will let companies migrate to Windows and still use existing Dbase files.

•

A new interface from **Compuserve Data Technologies** in Cambridge, Mass., links its System 1032 VAX-based RDBMS with Sequelink client/server development software from **Techgnosis, Inc.** Users can transparently access System 1032 data from OS/2 and Unix systems as well as from **Apple Computer, Inc.** Macintoshes. Available by July from Techgnosis in Boca Raton, Fla., the interface costs between $1,995 and $9,995.

•

Verity, Inc.'s new Topic SQL-Gateway lets developers integrate SQL databases into the new version of its Topic 3.0 wide-area network document retrieval system. The trick: hooking into RDBMS servers. The Mountain View, Calif., company also announced a new topic query language and support for major graphical user interfaces, including Microsoft's Windows.

•

The new DB2-Distributed Document Support (DDS) from **Viewstar Corp.** in Emeryville, Calif., lets users integrate **IBM**'s DB2 as a back-end database repository for Viewstar's document management system. DB2-DDS is part of Viewstar's Enterprise Computing Architecture for document management systems across multiple internetworked sites. DB2-DDS is initially available only to Viewstar's existing customers. The target date for general sale is late 1991.

•

IBM has named **Servio Corp.** an IBM Business Partner/Authorized Application Specialist. The Alameda, Calif.-based firm will help IBM market and install IBM's RISC System/6000 along with Servio's Gemstone object-oriented DBMS. Gemstone lets users integrate object data, such as sound, graphics and images, with existing applications.

SUSAN NYKAMP

While Others Romance You...

Encore Knows How To Talk "Dirty"!

You've got problems. Dirty Problems.
The kind with I/O levels that make a supernova seem like a small burst of light.
You could call "you know who." You could get the slide show treatment and try to explain to the big guy why you need twelve million dollars for a new mainframe.

Or, you could call Encore. Open systems and standards.
mainframe-level performance at minicomputer prices, and the highest I/O bandwidth in the industry. At Encore, we know the nuts and bolts of complex and large systems.
NASA, the F-18 project, DARPA contracts: for 30 years, we've provided elegant solutions for the most demanding applications in the world.

Call 1-800-933-6267
in the U.S.A. and Canada;
or, 305-587-2900 worldwide.

ENCORE

Encore Computer Corporation
6901 West Sunrise Boulevard, MS704
Fort Lauderdale, Florida 33313

OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX OBSERVE ISOLATE FIX

THE ILLUMINATION YOU NEED TO UNLEASH THE HIDDEN POWER OF DB2.

Without the right tools, it is almost impossible to observe what's going on inside DB2. Inside the black box. As a result, tasks that should be being handled by various maintenance groups are consuming precious DBA resources.

That's why Candle offers a complete set of tools to illuminate DB2. Tools that observe problems based on your exception thresholds. Isolate the root cause of problems. And automatically fix problems or recommend speedy solutions.

Using Candle's tools, day-to-day Catalog activities are simplified and automated. Overallocated DASD space is reclaimed. Time spent running reorgs and image copies is reduced. Poor-performing SQL is isolated and explained. And performance and service levels are easily monitored.

By simplifying and automating such time-consuming tasks, Candle's tools allow these tasks to be delegated to the appropriate groups, freeing the DBA to unleash the hidden power of DB2.

!Candle®

FREE ILLUMINATOR KIT

To become more enlightened about how Candle's powerful tools can streamline DB2 management and administration, send for your free Illuminator Kit today. Complete the coupon and mail to Candle Corporation, 1999 Bundy Drive, Los Angeles, CA 90025. **For faster service call 800 843-3970, Dept 406.**

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

Copyright © 1991 Candle Corporation. All Rights Reserved

DB2 is a registered trademark of International Business Machines, Inc.

Comparisons of six multiuser RDBMSs

BY CELESTE ROBINSON
SPECIAL TO CW

Six new multiuser, relational database management systems claim to live in two worlds: powerful languages and development tools for work-group applications and front ends for ad hoc manipulation. All the programs work on a local-area network, but some offer better multiuser controls. Here's a quick comparison:

Revelation Technologies, Inc.'s Advanced Revelation 2.03

Pros: Powerful form generator, file-level controls.

Cons: Confusing user interface, no band-oriented report generator, slow queries, high price.

Born to help developers create sophisticated transaction-processing applications, Advanced Revelation adds a full set of interactive tools to its programming language. Unless users need maximum programming flexibility, Advanced Revelation is only a fair value.

Dataease International, Inc.'s Dataease 4.24

Pros: Great forms, file-level controls, excellent multiuser capabilities.

Con: Difficult report generator.

Dataease is a friendly, competent DBMS with a top-notch form generator, but it still comes up short. Programmers will lament the lack of a debugger, LAN users will be disappointed by the slow multiuser queries, and just about everyone will struggle with the report writer.

Ashton-Tate Corp.'s Dbase IV 1.1

Pros: Popular language and file structure, great query-by-example (QBE) and report generator.

Cons: Disorganized interface, no file-level controls.

Despite a confusing interface and middling speed, Dbase IV has a lot going for it: top-notch form, report and application generators, superb QBE and an industry-standard language and file format. If users need to enter or update data without creating applications, look elsewhere.

Fox Software, Inc.'s Foxpro 1.02

Pros: Fastest graphical-oriented interface, Dbase-compatible.

Cons: Nonrelational form generator, no QBE or file-level controls.

Foxpro leads the pack in performance, development tools and ease of use. The Dbase file format and lack of QBE make it less useful for ad hoc data manipulation than some, but for applications development, Foxpro is superb.

Borland International, Inc.'s Paradox 3.5

Pros: Excellent interface, strong QBE, flexible relational capabilities, fast.

Cons: No long text fields, troublesome network data entry.

Whether users are writing applications or working with data directly, Paradox is powerful, flexible and easy to use. It's also fast. Unless users demand full Dbase compatibility or plan on designing a complex transactional processing application, Paradox is your best buy.

Microrim, Inc.'s R:base 3.1

Pros: Excellent form and report generators, data dictionary.

Cons: No debugger, poor network performance.

R:base makes building applications so easy, your users may not need a developer to create them. It boasts a powerful programming language, superb report and form generators, a pleasant interface and superb QBE. R:base's slow transaction processing makes it a poor choice for multiuser applications. ●

Robinson is a free-lance writer in Belmont, Calif., who specializes in database management.

Thinking About EIS?
Think Twice.

EIS II

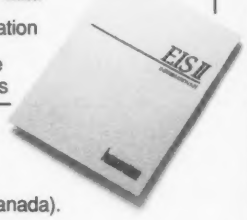
It's estimated that more than half of today's Executive Information Systems fail*. So if you're thinking about installing a traditional EIS, think twice.

EIS II is the new generation of Executive Information Systems. It's more than just an electronic "slide show". It's a blueprint for integrated end-user computing, providing true analysis and issue management for executives, managers and staff across your organization.

Only Express/EIS® from Information Resources gives you the power of EIS II today. On standalone PC, LAN or mainframe. You get full data integrity, end-user flexibility, cooperative processing and worldwide support.

Express/EIS Delivers:

- Common graphical user interface (GUI)
- Smooth integration of tracking, analysis and issue response
- Intelligent exception reporting and drill-down on "live" data
- SQL access and transparent links to corporate data
- Rapid implementation
- Low maintenance and support costs



For a free EIS II Information Kit, call **617-890-8717** (**416-221-2100** in Canada).

information resources inc

*David W. DeLong, co-author of "Executive Support Systems: The Emergence of Top Management Computer Use."
©1991 Express/EIS is a registered trademark of Information Resources, Inc.

AAAI-91

THE NATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE
&
INNOVATIVE APPLICATIONS OF ARTIFICIAL INTELLIGENCE CONFERENCE

JULY 14-19, 1991
ANAHEIM, CA

A unique combination brings together both scientific and business communities in the year's leading AI forum . . . technical programs, tutorials, applications, interactive solution-focused panels . . . plus exhibits/demonstrations by leading suppliers of AI hardware, software and services.

American Association for Artificial Intelligence
445 Burgess Drive, Menlo Park, CA 94025
Phone 415-328-3123, fax 415-321-4457

IAAI-91

Get the lease with the most

Knowing how leasing companies specialize will help you put qualified lessors on your bid list and get the best lease rate you can

BY TOM MARTIN

Why do so many sophisticated information systems people use relatively unsophisticated means to select their computer lessors? Because they operate under the misconception that one bidder list, usually containing a small group of lessors, can meet the computer leasing requirements of all of their leased products.

This perception may not take into consideration that there are more than 500 computer lessors in the U.S., about 20 categories of computer products, 100 types of products within those 20 categories and no one leasing company that specializes in even half of the product categories.

Without knowing the size and scope of leasing options, the user may not select the lessor that can offer the best lease rate and ancillary benefits for a given product.

Finding the best lessor for the job doesn't mean merely increasing the size of your bidder list. Quality, not quantity, is the key objective.

To get qualified lessors to bid on each leased product, lessee companies need to understand lessor specialization areas, sort leasing requirements into manageable product groupings and set the bid process in motion (see story page 109).

J. Otto Seibold

Why a specialist?

What the specialist lessor typically offers a user is a low lease rate and specific product knowledge. Generalists typically base their pricing on residual forecasts supplied by outside forecasting services; forecasts are typically reduced by 10% to 30%. This gives them a margin of safety.

The competitive lease rates for a given product frequently require a higher residual assumption than is prudent for a generalist, so it has no recourse but to quote a higher lease rate in most cases.

By understanding how lessors specialize, customers are on their way to pinpointing those companies that can provide what they need. Lessors primarily specialize by product, in combination with factors such as lease term length, transaction cost, users' credit rating and the amount of residual risk they are willing to take.

• **Product specialization.** With the exception of being aware that lessors tend to specialize in either IBM or non-IBM products, users commonly lump lessors together. But the lessor landscape is much more complex. There are experts in mainframes, minicomputers, printers and so on.

Beyond these broad product categories, lessors segment themselves further into niches. For example, there are those mid-range lessors that deal mostly in one class of machine, such as an IBM Application System/400. While most lessors will arrange leasing for products outside their domain, they will often do so at a higher price than a specialist.

For example, during a recent bid on a large Hitachi Data Systems Corp. CPU, a generalist firm used a forecaster's residual numbers and bid on a 60-month lease, setting payments at $133,300 per month. An HDS mainframe specialist, using its own residual value numbers, quoted $126,500 per month on the same lease, saving the customer $408,000 over the life of the lease.

Furthermore, going to a product-specific lessor can provide benefits beyond cost. Its expertise in a given area can be valuable to a lessee. It's not unlike lawyer specialists: Someone who's an expert in corporate mergers is not likely to be the best advocate to handle your estate or draft your will.

• **Transaction size specialization.** Lessors also specialize in the cost of the transaction. While users often think large leasing companies are the only lessors that can handle a high-cost lease, this is not always the case. Many lessors in the industry are small "niche" lessors that have access to the necessary financing — both equity and debt — to handle a big money lease.

The user must be aware that just as the small-ticket transaction lessor (under $50,000 in cost) may be the wrong lessor for a big-ticket transaction (over $500,000), the big-ticket lessor can be the wrong one for a $50,000 lease. The big-ticket lessor would not make enough money per transaction to handle the overhead costs associated with making a small-ticket deal. In that case, the lessee might get hit with higher prices.

Users not understanding the vagaries of transaction size specialization might not make the best use of lessors. Requiring a big-ticket lessor specialist to first finance a lower cost product as a prerequisite for other business can be a mistake.

Expertise in one kind of transaction size leasing does not often carry over to another kind, and it is likely to cost the user the services of a more appropriate lessor for each transaction size.

Continued on page 108

Martin is president of Computer Financial, Inc., a leasing company in Hackensack, N.J.

• **How the pros say it**

• **Fill-in-the-blanks bid form**

• **Surveying the field**

Continued from page 107

• **Residual risk assumption specialization.** The lessor that specializes in a product will almost always take the highest residual position in that product because of its intense study of the residual forecast. To get the lowest lease rate, a company needs a lessor that is willing to take the greatest residual risk — that is, willing to recover the lowest amount of the cost over the lease term.

For the lessee, that means the higher the residual exposure taken by the lessor, the lower the monthly rent (see chart at right). A specialist will, however, occasionally refuse to support the product it normally specializes in if it is not economically feasible.

• **Lease term specialization.** Many users are surprised that the length of the lease term they want can qualify or disqualify some lessors from their bidder list. Lessors tend to specialize in short-term (two to three years) or long-term (four-plus years) leases based on their investment requirements or the requirements of their equity investors.

Lessors that can use tax benefits (either directly or through investors) will bid most competitively on long-term leases that have the lowest residual exposure. That translates into lower monthly rates.

For example, if a user was looking at a $1 million, 60-month lease with the vendor taking a 10% residual risk assumption, the rent not using tax benefits would be $19,470 per month. On the other hand, the monthly rent using tax benefits would be $714 cheaper and would translate to $42,840 in savings over the life of the lease.

Residual risk and you

The higher the residual exposure taken by the lessor, the lower the user's monthly rent

Term: 36 months Interest: 10% Cost: $1 million

Case	Residual percent taken by lessor	Lease rate factor	Monthly rent
1	0	3.20%	$32,000
2	10	2.96%	$29,627
3	20	2.73%	$27,253

Source: Computer Financial, Inc. CW Chart: Janell Genovese

Short-term lease specialists tend not to be tax-oriented and are willing to take significant residual risks with the expectation of substantial gains. While the lease rate may be higher, their value to the user is high flexibility in lease term.

• **Users' credit specialization.** Most lessors market to users with a specific class of credit: investment grade, middle market or high risk. Users that have an investment grade credit rating will be wasting their efforts if they solicit bids from lessors that specialize in middle or high-risk credits.

These lessors price their leases based on the interest rate requirements of their financing sources. These sources are willing to take risks in order to receive the higher rates charged for weak credit.

With an understanding of how lessors specialize, customers can begin to sort the products they want to lease into manageable groupings, each with its own leasing criteria. Groupings lessen the burden of mailing out bids and negotiating contracts with lessors for each product.

Grouping by product type is the most logical exercise, with the number of product types placed into each grouping unique to each user. An example of such a grouping would be personal computers, terminals and workstations.

Priorities for determining the products in a grouping are also based on the dollar amount and/or frequency of the leasing activity for each product. Large mainframes would usually be a separate product grouping because, unlike lower cost products, the very high product cost requires lessor selection criteria strongly influenced by lease rate alone. Furthermore, there are few bids for such big-ticket machines.

Similarly, if the user leases a great number of disk drives, it may have the drives and disk controllers in one grouping to handle the higher frequency of bids.

Selecting lessors

Once the product groupings are established, the user must determine the number and identity of lessor specialists for the bidder list applicable to each grouping. The user should be sure to have a separate bidder list for each grouping.

If large mainframes constitute a grouping, and if the user decides that lease rate is the only criterion for selecting a lessor for that grouping, a relatively large number of lessor specialists could be allowed on that grouping's bidder list because the bid evaluation process will be a simple comparison of lease rates.

While most companies will find lessors knocking on their doors to get involved in a deal, they may find it preferable to conduct an objective lessor survey. (For information on how to go through the survey and bid process, see story page 109.)

The survey form can be tailored to solicit specific lessor qualities the user has determined to be pertinent to each grouping. A user could send a survey form to all its existing lessors and those that want to be considered for business. The lessee can find out which leasing companies specialize in which areas by contacting leasing associations (see list page 109).

To get the most out of its computer leasing operation, the lessee must consciously approach the leasing of each product or product grouping as a separate and unique business. As such, each business transaction requires a discrete bidder list that is designed to meet the requirements of that business only.

The user benefits because the lessor bid process is streamlined, and the user has confidence that his leasing business can be awarded to the most desirable lessor for each lease transaction. •

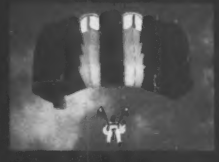
Before you jump into production . . .

Ensure the reliability of your applications, systems, and network with Hiperstation — the powerful automated testing tool from Peregrine Systems.

Hiperstation, an SAA-compliant product, dramatically reduces the time spent testing your application development and maintenance, while assuring system integrity. Improve the quality of your applications and software (CICS, IMS, IDMS, Model 204, TSO ISPF, DB2, or any VTAM application).

Hiperstation helps you to easily:
- Eliminate errors with automated application regression testing.
- Stress test applications and systems.
- Validate new system and software releases.
- Automatically create documentation.
- Simulate complete system workload.

Features include: True ISPF integration • SAA procedural language (REXX) • Remote non-disruptive session recording • Automated creation of test data • Multiple user simulation • Automated test script repetition.



With Hiperstation the sky's the limit to your testing capability.

ISPF HIPERSTATION *Reliable Automated Testing*

Peregrine SYSTEMS

Call today for more information or to arrange a free trial.
1-800-638-5231
1959 PALOMAR OAKS WAY • CARLSBAD, CALIFORNIA 92009 • 619-431-2400 • FAX 619-431-0696

Insider leasing terms

Learn how to speak "lease speak." Here are definitions of commonly used words in the leasing industry. Explanations are provided by the American Association of Equipment Lessors in Arlington, Va.

Capital lease: Type of lease classified and accounted for by a lessee as a purchase and by the lessor as a sale or financing.

Equipment schedule: A document that describes in detail the equipment being leased. It may also state the lease term, commencement date, repayment schedule and location of the equipment.

Finance lease: A full-payout, noncancellable agreement in which the lessee is responsible for maintenance, taxes and insurance.

Full-payout lease: A lease in which the lessor recovers, through the lease payments, all costs incurred in the lease plus an acceptable rate of return without any reliance on the leased equipment's future residual value.

Hell-or-high-water clause: A clause in a lease that reiterates the unconditional obligation of the lessee to pay rent for the entire term of the lease, regardless of any event affecting the equipment or any change in the circumstances of the lessee.

Lease: A contract in which one party conveys the use of an asset to another party for a specific period of time at a predetermined rate.

Lease rate: The periodic rental payment to a lessor for the use of assets. May also be defined as the implicit interest rate in minimum lease payments.

Leveraged lease: A type of lease wherein the lessor provides an equity portion (usually 20% to 40%) of the equipment cost and lenders provide the balance on a nonrecourse debt basis. The lessor receives the tax benefits of ownership.

Master lease: A contract in which the lessee leases currently needed assets and is able to acquire other assets under the same basic terms and conditions without negotiating a new contract.

Net lease: A lease wherein payments to the lessor do not include insurance and maintenance, which are paid separately by the lessee.

Open-end lease: A conditional sale lease in which the lessee guarantees that the lessor will realize a minimum value from the sale of the asset at the end of the lease.

Operating lease: Any lease that is not a capital lease. These are generally used for short-term leases of equipment. The lessee can acquire the use of equipment for a fraction of the useful life of the asset.

Residual value: The value of an asset at the conclusion of a lease.

A little work goes a long way

With the right tools, a smart user can juggle several lessors

BY TOM MARTIN

The path of lease resistance is to lease all products from one company and not worry about rates, terms and conditions.

While expedient, this approach is naive. A well-informed user can handle many potential lessors without great effort if he has the tools to do the job: a lessor survey to determine who should be included for each type of lease, a fill-in-the-blanks bid response form and a standard contract.

This standard contract should be one the user is familiar with and has used before to negotiate other deals. He must make clear to prospective bidders that they must accept it with few, if any, modifications.

Not only does the user have a standard gauge from which to operate, but this also saves him from going to the legal department for each new lessor bid.

In fact, one Fortune 10 company using this survey/bid/contract approach had one person successfully handle bid initiation, bid collection and analysis and contract negotiation for more than 10 data centers.

The survey

The user will want to craft a lessor survey pinpointing the areas of specialization that are important for the particular lease. This survey reveals what equipment the lessor is best at leasing. Questions should focus on the area important to the lessee, whether that be product, lease term or transaction size specialty (see standard survey form at right).

By contacting the following associations, a lessee can get a listing of specialists to which it should send its survey:

▶American Association of Equipment Lessors
(703) 527-8655

▶American Society of Computer Dealers
(202) 785-4990

▶Computer Dealers and Lessors Association
(202) 333-0102

▶Digital Dealers Association
(313) 475-8333

▶Computer Dealer Information Guide
Daily Marketing Corp.
(714) 662-0755

Once the user has targeted likely lessor candidates from the surveys, it should send out a bid request form (see form bottom left) with filled-in requirements such as cost, lease commencement date and lease term. The lessors then fill in their bids and return the bid request to the firm.

One rule of thumb on how much time should be spent researching and crafting a deal is that it should be roughly comparable to the potential savings the lease provides. For example, if the difference between two competing lessors is 1%, a customer that is leasing a $10,000 unit over a period of 48 months will have a total savings of $120. One percent of a $10 million deal, however, translates into nearly $121,000 over the same period. •

The bid request

The process is twofold: Users send out the form with the top part filled in; lessors return the same form with their bid

BID REQUEST

Product:	*IBM 9000# - Model 320*
Features:	*1900 (extra memory)*
Cost:	*$1,540,224*
List:	*$1,604,400*
Lease Commencement Date:	*July 1, 1991*
Rent:	*Monthly in advance*
Bid Due Date:	*June 1, 1991*
Lease Term:	*48 months* / *60 months*
Bidder's Lease Rate Factor:	*48 months = .023958* / *60 months = .020922*

User fills in this part first, then sends bids to lessors on his list

Lessor returns bid with this part filled out

Note: Bidder must agree to abide by the terms and conditions of the lease accompanying this bid request (if it has not already been accepted by bidder).

Bidder: *XYZ Leasing Co.*
Signature of Officer: _____
Date: *May 15, 1991*

Awardee will be contacted by telephone.

Source: Computer Financial, Inc.

CW Chart: Janell Genovese

The lessor survey

While your specific questions may differ slightly, this is the basic form a lessor survey should take

DETERMINING WHO GETS ON THE LIST

What percent of your leasing business is by each manufacturer?

IBM
Amdahl Corp.
Digital Equipment Corp.
Hitachi Data Systems Corp.
Other (specify)

What percent of your lease business is in each of the following groups?

Small CPU	Other printers
Medium CPU	Communication controllers
Large CPU	Communication switches
Application System/400	Terminals and controllers
Disks and controllers	Workstations
Tapes and controllers	PCs
Laser printers	RISC System/6000

What percent of your lease business deals with the following lease terms?

2 years	4 years
3 years	5 years

What percent of your lease business deals with the following user credit classes?

Investment grade
Middle market
Weak

What percent of your lease business deals with the following transaction size?

Under $50,000
$50,000-$250,000
$250,000-$500,000
$500,000-$1 million
Over $1 million

What three products are you best (lowest rate) at financing?

1. _____
2. _____
3. _____

Number of years in business

Source: Computer Financial, Inc.

CW Chart: Janell Genovese

NOT IN THE SAME LEAGUE.

No other application development software can measure up to the awesome power of PowerHouse® from Cognos.®

Because PowerHouse isn't just a standalone development tool. It's a complete application development solution, including integrated CASE. So it speeds every phase of the development cycle—from analysis and design, through 4GL coding, to end-user reporting and maintenance. With so much industrial-strength power, it turns the toughest applications into child's play.

Unlike patchwork solutions, PowerHouse is seamless. It eliminates bottlenecks. Integrates all phases of development. And yields higher productivity at every step. No wonder PowerHouse is the leading application development software on Hewlett-Packard. Digital. Data General, too. And now available for Unix and IBM's AS/400. In fact, over 18,000 installations in 68 countries rely on PowerHouse.

So try using some real tools for application development. Call 1-800-4-COGNOS. In Canada, call 1-800-267-2777.

COGNOS®

Real Tools. Not Toys.

Software Business Practices Committee

U.S. + 1-800-4-COGNOS • U.K. + 44 344 486668 • France + 33 1 47 75 07 78 • Germany + 49 69 666 6802 • The Netherlands + 31 3402 49199
Belgium + 32 2 725 1042 • Sweden + 46 8 752 7795 • Spain + 34 1 556 0401 • Australia + 61 2 437 6655 • Hong Kong + 852 892 0567
Singapore + 65 220 3248 • Japan + 03 5391 2400 • Latin America 404 471 0885

© 1991, Cognos, Incorporated. Cognos and PowerHouse are registered trademarks of Cognos, Incorporated.
The other trade names referenced are registered, trademarked or service marked by their respective manufacturers.

NATIONAL
BRIEFS

It's 1995: Do you know where your dollars are?

▶ If the results of a recent analysis published by Burlington, Mass.-based market research firm Decision Resources, Inc. are on target, one out of every four of them spent on information systems, software and services will be for outsourcing. "The information industry will be permanently changed by the increased importance of outsourcing," concluded consultant Frederic Withington, who authored the article.

More

▶ For quarter after quarter of posted losses, representatives of **Data General Corp.** reiterated that the firm still showed a solid cash position. Now that DG's quarterly numbers are being scripted in black, the firm seems to be taking its cue from Madonna's songbook: "More is better than nothing, yes — but nothing's better than more." Late last month, DG filed with the Securities and Exchange Commission a proposed offering of $100 million in 10-year convertible subordinated debentures, the proceeds of which will go for "working capital and . . . general corporate purposes."

Clean boards, no; clean air, yes

▶ **Apple Computer, Inc.** has announced that by the end of next year it will completely eliminate the use of ozone-depleting chlorofluorocarbons to clean electronic assemblies and circuit boards. The Cupertino, Calif.-based company said it has developed a new process for circuit board assembly that does not require the boards to be clean.

No fooling

▶ Yokohama, Japan-based software player **Hitachi Software Engineering Co.** announced last week that it did indeed arrive in the U.S. on April 1. **Hitachi Software Engineering America Ltd. (Hisal)**, led by Gen Shiroo and headquartered in San Francisco, will take over the marketing of parent Hitachi Software's biotechnology software products, formerly handled through **Hitachi America Ltd. (HAL)**, the U.S. trading arm of Tokyo-based Hitachi Ltd.

Pen-based PCs poised for breakthrough

BY PATRICIA KEEFE
CW STAFF

The combined effect of a saturated desktop market, a persistent recession and fierce discounting have sent the personal computer industry into a downward spiral. Already, reports project that the increasingly competitive laptop segment could be next. The one bright spot on the horizon appears to be the promise of pen-based computing, which one observer noted is expected to "shatter the glass ceiling" that prevents new users from coming into the industry.

Pen-based computers — small tabletlike devices with electronic pens — use a paper and pen metaphor with no cursor, providing users with more familiar and more direct input control. Not only are these tablets extremely portable, but many observers think they will change the way users deal with information.

The result, according to Forrester Research, Inc., a market research firm based in Cambridge, Mass., is that pen-based computing could be the next mass market for the computer industry.

Storm warnings

Surveys have predicted from 7 million to 54 million potential customers for the technology. "It will be a major thunderstorm," Forrester Research President George Colony said.

With its attendant revenue potential, the nascent pen market is attracting all kinds of heavyweights — including IBM, Microsoft Corp., Lotus Development Corp., Apple Computer, Inc., NCR Corp., Sony Corp. and Tandy Corp. — as well as substantial investment capital directed at start-ups such as Go Corp., Slate Corp., Pensoft, Pen Pal and Momenta (see story page 117).

"I haven't seen this much concentrated activity since the first days of the PC clones," said Vern Rayburn, chairman of Slate. "This is the first computer you can put in front of people with no caveats," he added.

Sales estimates of up to $3.5 billion by 1995 have whetted appetites. That optimistic figure comes from BIS Strategic Decisions, a Norwell, Mass.-based firm that also offers a conservative prediction of $1.5 billion. Which track the market takes will depend on a number of variables during the next 18 months.

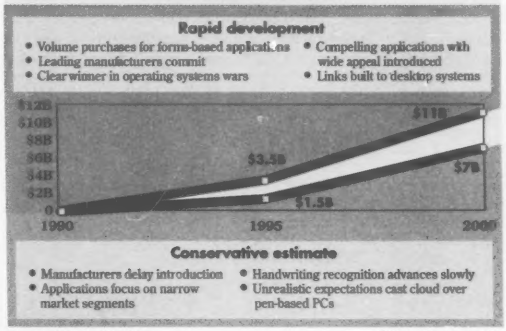
"This is a market that could . . . take off rapidly later this year and account for sales in the millions of units within a very few years," said Richard A. Shaffer, editor of New York-based Technologic Partners' "Computerletter" newsletter.

After forays by industry pioneers such as Grid Systems Corp., Wang Laboratories, Inc.

Continued on page 117

Possible futures

Depending on the events that take place during the next 18 months, pen-based computing could take off at different speeds



Source: BIS Strategic Decisions

CW Chart: Doreen St. John

Bush drums up export enthusiasm

President promises government support for those who decide to go global

BY NELL MARGOLIS
CW STAFF

BOSTON — President Bush came here late last month to urge businesses to go global and to promise his administration's aid in getting there.

"If you want to succeed in business these days, you can't worry just about competition within the U.S.," the president told the approximately 350 representatives of local government and business who flocked to Boston's World Trade Center for a daylong conference on the whys — and, significantly, the hows — of exporting. "You have to be ready to go head-to-head with the rest of the world."

Information technology — both as a subject and as an enabler of a stepped-up, government-aided export initiative — was a prominent theme in the agenda of the conference, from opening remarks by Data General Corp. Chief Executive Officer Ronald Skates to the demonstration of the National Trade Data Bank, a compact disc/read-only memory (CD-ROM) database created by the U.S. Department of Commerce to give firms a leg up in the global business arena.

Department of Commerce Secretary Robert Mosbacher joined Bush on the trip to tout the benefits of global investment, particularly for small and midsize companies that have not yet ventured overseas. Statistics indicate that many more firms are talking about global business than doing it. Massachusetts, for instance, is the 10th heaviest exporter among the 50 states. However, more than 70% of Massachusetts' firms do no exporting at all, and three technology firms — Digital Equipment Corp., Prime Computer, Inc. and Raytheon Corp. — accounted for more than 50% of the state's $11.6 billion in 1990 exports.

Because the economic future belongs to the able exporter, Bush said, it is critical that the profile in every state expand to include firms across the size spectrum. A wealth of technological aids, he emphasized, are now in place to avail the would-be exporter of pertinent information. "Just pick up the phone and dial 1-800-USA-TRADE," he urged, for information regarding "a full panoply of government services" set up to help business owners in their overseas forays.

Stella Johnson

President Bush, *flanked by Secretary Mosbacher (left) and Massachusetts Gov. William Weld, exhorts Massachusetts businesses to venture overseas*

The National Trade Data Base packs 90,000 federal documents onto a CD-ROM disc that plays on IBM-compatible personal computers. Released monthly and updated every two years, it offers would-be exporters country-specific, industry-specific and cross-referenced information ranging from legal and governmental regulations to the telephone and fax numbers of likely contacts. The price is scaled down to attract small businesses: $360 for a 12-month subscription, or $35 for a single disc.

"This kind of access certainly would have been useful to me when I started out," said Frank Wright, who as CEO of Innovation, Inc., pioneered joint venturing between the U.S. and the Soviet Union.

INTERNATIONAL BRIEFS

I want my LCD — and in color

▶ Tokyo-based **Toshiba Corp.** and **IBM Japan Ltd.** have begun producing large color LCD screens at their recently completed joint-venture manufacturing plant located in Himeji, Japan. The joint company, called **Display Technologies, Inc.**, was announced last November and is now making 10.4-in. displays with 640- by 480-pixel resolution; Display Technologies will gradually increase the size of the products, which are expected to become popular additions to portable computers as soon as their manufacturing volumes rise and their prices drop.

The Great Network of China

▶ According to a recent report in the Chinese press, China's **Ministry of Foreign Economic Relations and Trade (Mofert)** is planning to establish a computer network that will link all related trade bodies in China and overseas. The network is expected to boost China's competitive position in international markets. Rong Xingquan, director of Mofert's computer center, estimated that the entire computerization and networking process will take five years to accomplish. The computer center is in charge of organizing the project, which is being undertaken by trade departments at various levels.

Dog days

▶ After a wave of horrific incidents involving pit bull terriers swept **London**, computers rushed to the rescue, according to a report in the British business press. Appropriately enough, the machines came from **Groupe Bull**. The French computer company has produced a dangerous dogs register, which is intended to track incidents involving canines. Police using the system will be able to identify known problem animals and their owners with greater ease, according to the company.

Windows on Tokyo

▶ **Japan**'s first exposition devoted to **Microsoft Corp.**'s **Windows 3.0** is scheduled to be held at the Nippon Convention Center in Tokyo from Dec. 19 to 21. Some 200 Japanese and overseas vendors are expected to exhibit their wares, and a crowd of 40,000 is expected.

Rocky Mountain 'Hi'

▶ Germany-based international software player **SAP AG** is expanding westward. This week, wholly owned subsidiary **SAP America, Inc.** is opening a Western Region office to serve all states west of the Rockies.

Cray expands Europe strategy

BY CAROL HILDEBRAND
CW STAFF

MINNEAPOLIS — Cray Research, Inc. is turning up the gas under its European operations, creating several new executive positions and filling some existing slots.

Robert Levy was named vice president of European development. The post puts him in charge of pursuing strategic alliances with other European organizations.

Levy, who formerly held the position of president and general manager of Cray Research France SA — which included the firm's Southern Europe region — will report to the company's Technology Council. The Technology Council is made up of six senior executives who determine the business and technical courses for Cray Research.

Only weeks ago, Richardson, Texas-based Convex Computer Corp. announced its heralded C3 series, a family of gallium arsenide-based supercomputers aimed directly at Cray Research's low end. Analysts have noted that the advent of the C3 heats up the competition in the supercomputer arena [CW, May 13].

The company's move stemmed from some strategic planning sessions held in early May, according to Cray Research spokeswoman Kate Neessen. "We determined that because a good 30% of our revenues come from Europe, we needed to pursue strategic alliances within that sector." Neessen said the alliances could encompass ventures ranging from developing a common product to marketing in conjunction with a foreign-based company.

The reorganization signaled a new direction for Cray Research, Neessen said. "It's very much a strategic change," she said. "It's not in response to business, but rather it's a projection of how we're going to have to work. Europe is the battleground for the '90s, and we want to be prepared."

In other movements, Don Whiting was promoted to the newly created position of vice president of customer services. He will be responsible for the activities of the company's worldwide service organizations, as well as its technical operations group. Filling Whiting's previous position as vice president and general manager at Cray Research Europe Ltd. will be Bryan Little.

EXECUTIVE CORNER

Moss at head of Texas start-up

Former **Lotus Development Corp.** Consulting Services Group Vice President **Franklin H. Moss** is the first president and chief executive officer of **Tivoli Systems**, an Austin, Texas-based start-up that was created to develop and market a suite of products and services aimed at the management and integration of distributed systems resources. Moss, who began his career at IBM, also headed the Domain Engineering Group at Apollo Computer, Inc. (now part of Hewlett-Packard Co.) and co-founded workstation manufacturer Stellar Computer, Inc. (now part of Stardent Computer, Inc.) prior to his career at Lotus.

As of now, when **IBM** says "our man in Europe," it means company Vice President **Renato Riverso**, who late last month succeeded IBM Senior Vice President **David McKinney** as president directeur general, IBM Europe. Riverso will also wear the hat of chairman, IBM Europe/Middle East/Africa. Meanwhile, McKinney is now on special assignment, reporting to Chairman John Akers; he remains a member of IBM's corporate management board. In his new capacity, McKinney will work with line management to improve IBM's business support structures as well as assuming responsibility for the firm's communications, information systems and environmental staffs.

Tim Davenport, formerly general manager of **Lotus'** graphics division, has assumed a new Lotus position: Late last month, he was named vice president of the Cambridge, Mass.-based software house's Graphics Products Division. In the new post, Davenport, who continues to report to Software Business Group Senior Vice President Frank King, will be responsible for overseeing the development and marketing of the company's graphics lines, the advancement of which is a high priority on the current Lotus agenda, according to King.

Washington, D.C.-based advanced communications products and research firm **Comsat** has named **Bruce L. Crockett** president and chief operating officer. Crockett, formerly president of Comsat's largest unit, the World Systems Division, replaces company Chairman and Chief Executive Officer **Irving Goldstein**, who had been serving as interim president and COO during the Comsat's executive search.

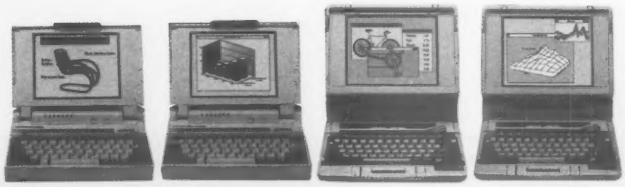
Robert T. Knight, who has been acting president and CEO of **Digital Sound Corp.** since February, was officially appointed to the office last month. A veteran of Xerox Corp. who also served as an executive at Computer Sciences Corp., Knight will be responsible for defining the corporate mission and steering the long-term marketing strategy of Carpinteria, Calif.-based Digital Sound, which manufactures a family of voice application platforms.

Los Angeles-based systems vendor **Logicon, Inc.** has named **Frank P. Dyke** to take on the position of president of the company's **Logicon Fourth Generation Technology, Inc.** subsidiary, which is located in La Jolla, Calif. Dyke, who formerly served on Logicon's corporate marketing staff, was a lieutenant colonel in the U.S. Air Force prior to joining the company in 1978.

INTRODUCING 5 NEW PORTABLES FROM ZENITH DATA SYSTEMS.

The conventional way to look at portable power is from the PC's perspective. The processor. The speed. The memory. At Zenith Data Systems, we believe the proper perspective is yours. How easily you can take full advantage of the power within your PC. A philosophy exemplified by our five new portables. Our breakthrough MastersPort 386SL. The first notebook you can use, and use, and use without ever thinking about battery life. Our SupersPort battery-powered i486™ laptops – the first ever. Both so advanced, they just might replace your desktop. Plus 286 and 386SX notebooks that are titans on performance. So if you want power without limits, these are the portables to move to. Unquestionably from Zenith Data Systems. For more information and the name of your nearest Zenith Data Systems Medallion Reseller, call 1-800-523-9393 in North America.

OF POWER.



MastersPort 286 | MastersPort 386SX | SupersPort 486SX | SupersPort 486

LOOK INTO THE POWER OF 5 NEW PORTABLES

	MastersPort™ 286	MastersPort 386SX	MastersPort 386SL	SupersPort i486SX	SupersPort i486
Processor – Speed	286 – 12/6MHz	386SX – 20/10MHz	386SL – 20/5/0MHz	486SX – 20/10MHz	486 – 25/12.5MHz
Co-Processor	80C287 socket	80387SX socket	80387SX socket	Upgradable to 486-20MHz	Integrated
Memory (Std./Max.)	1MB/2MB	2MB/4MB	2MB/8MB (64K cache)	4MB/16MB	4MB/16MB
Hard Disk Drive	30MB	60MB	60MB	120MB	120MB
LCD/Size	Backlit/8.85"	Backlit/8.85"	Backlit/8.85"	Edgelit/10.7"	Edgelit/10.7"
Video/Gray Scales	VGA/16	VGA/16	VGA/32	VGA/64	VGA/64
Power Management	• Suspend/Resume • Sleep mode • Low battery operation	• Suspend/Resume • Sleep mode • Low battery operation	*Premier System Management™* • Standby/Resume • Rest/Resume • Panic Save • Unattended communications	*Intelligent Power Management™*	*Intelligent Power Management*
Software	MS-DOS® included	MS-DOS included	MS-DOS pre-installed; Microsoft® *Windows*™ v. 3.0 included	MS-DOS and Microsoft *Windows* v. 3.0 pre-installed	MS-DOS and Microsoft *Windows* v. 3.0 pre-installed
Weight (with battery)	6.6 lbs.	6.6 lbs.	6.8 lbs.	15 lbs.	15 lbs.

ZENITH data systems
Groupe Bull

Intel386 and i486 are trademarks of Intel Corporation. MastersPort, SupersPort, Premier System Management and Intelligent Power Management are trademarks of Zenith Data Systems Corporation. MS-DOS, Microsoft and *Windows* are trademarks of Microsoft Corporation.

Copyright © 1991 Zenith Data Systems Corporation

Unisys to cut stake in Nihon

BY ELLIS BOOKER
CW STAFF

BLUE BELL, Pa. — Unisys Corp. announced late last month that it would gradually reduce its 33.4% equity stake (36.6 million shares) in Nihon Unisys Ltd. by up to 2.2 million shares through sales on the Tokyo Stock Exchange.

Tokyo-based Mitsui & Co., which also holds a one-third stake in the 3-year-old, $2.6 billion information systems company, has said it will take similar action.

According to analysts, Unisys was acting on an earlier stated objective. The company had decided to sell off assets as a means of obtaining cash needed to bolster the debt-ridden corporation.

"But this is small change compared to what they really need to sell," said David Schofield, an analyst at Duff & Phelps Investment Research Co. in Chicago, with regard to the proposed Nihon Unisys divestment.

At current stock prices, Unisys would net about $55 million if it sold the 2.2 million shares immediately, Schofield calculated.

Unisys has put only a small portion of its holdings on the market, Schofield speculated, because of worries that a larger divestiture would spark a negative reaction in Japanese financial and commercial markets.

Indeed, Unisys President and Chief Operating Officer Reto Braun said the planned equity sale did not alter the company's commitment to the Japanese market.

"We will continue to be a long-term player in the Japanese computer market," Braun said in a prepared statement.

To compete in the '90s, you need...

open communications using TCP/IP, OSI, ISDN, SNA,

data transparency across IBM, Apple®, DEC, HP and oth

network management that's easy, reliable and richly de

advanced applications like image, telephony and comp

an extensive growth path that protects your investmen

a high-function server that makes cooperative processi

© 1991 IBM Corp. IBM and AS/400 are registered trademarks of IBM Corp. Trademarks of others include Novell Inc. and Apple Computer, Inc.

Ethernet and Novell®

er platforms

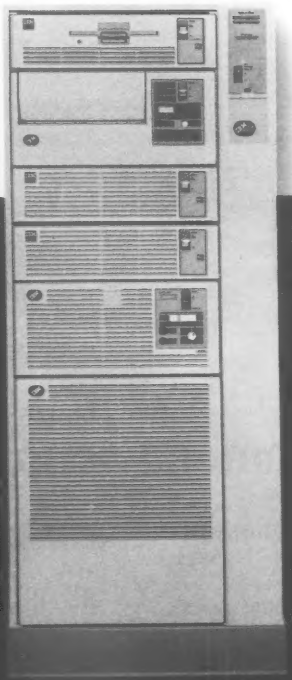
veloped

uter-based FAX

ts in software and hardware

ng a reality

...an IBM AS/400®.



IBM®

To find out more about how the IBM AS/400 can give you a competitive edge, call an IBM marketing representative. Or, call for free literature including the IBM AS/400 Solutions Catalog.

1 800 365-4 IBM, ext. 12

IBM Rochester

Malcolm Baldrige National Quality Award 1990 Winner

SCIENTIFIC AMERICAN

presents
the September 1991
single topic issue

Communications, Computers and Networks

For the past 41 years, *Scientific American* has devoted one issue each year to an in-depth look at a single topic. This year, the single topic issue will provide the definitive look at networks and networking and the products and services of the communications industry.

The articles will be written by such leading scientists and industrialists as Michael Dertouzos, Alan Kay, Sen. Albert Gore, Mitchell Kapor, Vinton Cerf, Irwin Jacobs, Andrew Viterbi, Lawrence Tesler, Mark Weiser, John Seely Brown, Nicholas Negroponte, Lee Sproull, Ann Branscomb and Thomas Malone.

Advertisers can expect profound and widespread interest among people of influence.

A BONUS OF INFLUENTIAL READERS FOR ADVERTISERS:
"Communications, Computers and Networks" will be retained and referred to. And advertisers will benefit from the substantial circulation and readership bonuses that *Scientific American*'s single topic issues always deliver.

Scientific American readers...
- •70% are managers or professionals
- •81% are college graduates
- •57% are involved in purchasing computers, software and peripherals
- •86% use computers at work
- •39% work for companies that use networking software

CLOSING DATE: JULY 10, 1991

MATERIALS DUE: JULY 19,1991

MAKE YOUR ADVERTISING PART OF THIS EXTRAORDINARY SHOWCASE! For further advertising information, contact your local sales representative or:

Robert F. Gregory, Advertising Director, Scientific American, 415 Madison Avenue, New York, NY 10017, 212-754-0522

Source: Computer Subscriber Survey conducted by Simmons Market Research Bureau, March 1990

More Systems and Software!

51 Issues for ~~$48~~ NOW ONLY $38.95

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues.
That's a savings of over $9.00 off the basic subscription rate.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

*U.S. Only. Canada $58.97, Central/South America $130, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
75. User: Other _____
95. Vendor: Other _____
(Please specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT
10. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
60. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management
OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Librarians, Students
90. Others _____
(Please specify)

COMPUTERWORLD
MAP/TOP to get better standards fit
Judge kills Dbase copyright
3Com to cut back software operations
Playing 'Skill Connection' with IS
Failures poster portable PCs
INSIDE

3. **COMPUTER INVOLVEMENT** (Circle all that apply)
Types of equipment with which you are personally involved either as a user, vendor, or consultant.
A. Mainframes/Supermins
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
F. No Computer Involvement

E4122-2

Recyclable Paper

More PCs and Workstations!

51 Issues for ~~$48~~ NOW ONLY $38.95

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues.
That's a savings of over $9.00 off the basic subscription rate.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

*U.S. Only. Canada $58.97, Central/South America $130, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
75. User: Other _____
95. Vendor: Other _____
(Please specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT
10. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
60. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management
OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Librarians, Students
90. Others _____
(Please specify)

COMPUTERWORLD
Systempro wins user respect
OS/2 trimmed down in hopes of a better fit
Outsourcing threat spurs court battle
Special Report: Hospital systems
TKO for programmer OT
IBM on object-oriented path
INSIDE

3. **COMPUTER INVOLVEMENT** (Circle all that apply)
Types of equipment with which you are personally involved either as a user, vendor, or consultant.
A. Mainframes/Supermins
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
F. No Computer Involvement

E4122-2

Recyclable Paper

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-2144

Pen-based

FROM PAGE 111

and Data Entry Systems, the market should get a second, more important wind in early 1992, analysts said.

For instance, an initial release of Go's 32-bit, object-oriented Penpoint operating system — optimized for Intel Corp.'s 80286 processor — shipped to developers in February. The first hardware offerings and a final, 386-based Penpoint could be ready by fall, giving a green light to user pilots in 1992.

Another factor expected to propel the market forward is a relatively short learning curve for pen-based systems. Shaffer said the selling and training cycle for stylus systems is "considerably faster" than that for conventional keyboard machines.

Meanwhile, pharmaceutical, insurance and health firms are eager to exploit the technology, which Framingham, Mass.-based market research firm Technology Investment Strategies Corp. said will provide mouse replacement, editing tools and text input.

Some users have already begun development efforts, according to Rayburn (see story at right). For example, State Farm Mutual Automobile Insurance Co. in Bloomington, Ill., is already working with IBM to develop a pen-based system to estimate auto repairs. State Farm has a potential user base of 30,000 agents and adjusters [CW, Jan. 28].

Slate, which has developed an applications generator for pen-based programming, has clients already experimenting, designing applications and doing field tests. "They are getting ready to make some fairly large commitments, in the 1,000s or 10,000s of unit buys late this year or early '92," Rayburn said.

In the operating system arena, the race is between Go's Penpoint and Microsoft Windows' Pen Windows. Most analysts predicted there will be room for both products, which are attractive for different reasons. While Microsoft took the compatibility-with-today's-environment route, Go built from the ground up what some analysts have dubbed a "glamorous" platform for pen-based computing.

The two companies have worked together, trading technology in some areas. However, they do not agree on some key standards — so-called "gestures," or recognizable keyboard marks, for example.

Every market has its bumps, and pen-based computing is no exception. Cost could be a killer. Technology Investment Strategies pegs the minimum Penpoint configuration at 4M bytes of random-access memory and an Intel 80386SX chip, with system prices ranging from $4,000 to $7,000. Nor are the customized packages expected to be cheap. Microsoft's approach will be less expensive, possibly costing as little as $2,500 to $3,000, because of its focus on mainstream computing, Technology Investment Strategies added.

But this may not prove a barrier to those industries that can fully exploit the systems and quantify productivity levels. In those areas in which forms must be filled out and signed in the field, for example, return on investment can be substantial, especially if the user is able to eliminate some steps involved in processing that information.

Rayburn cited one client that processes more than 200,000 paper orders per day, experiencing a 30% error rate. If the company is able to cut that error rate even in half by switching to pen-based forms, it would pay for 10,000 units, he said.

Other areas that remain to be refined, albeit probably not in the short term, are handwriting recognition, a color display and true, effortless connectivity.

In its current state, handwriting recognition has an accuracy rate ranging from 80% to 90%, which is not considered sufficient, according to Technology Investment Strategies. It predicted developers will get around this problem in the short term via "clever interface solutions." For example, relying on forms limits the amount of data a user needs to input.

Ease of use, which encompasses the list above, is probably the biggest requirement. Pen-based systems are meant to be carried anywhere and everywhere, often by noncomputer-oriented personnel. It is critical that they be easy to use. Go has addressed this in part by embedding a document architecture into Penpoint. According to the company, when users need to run an application, they simply open their documents and go.

Putting pens in the proper places

As with most other computer markets, applications availability is said to be critical to the emerging pen-based niche. Three types of applications are seen as targets: some existing software; applications such as personal information managers that exist today on PCs but remain in niche markets; and new applications built specifically for pen-based computing.

Technologic Partners' Shaffer said he expects the market to develop in two stages. The initial market will target specialized applications for mobile sales personnel, blue-collar workers and other noncomputer users. Later, once the technology for remote communications and handwriting recognition has evolved, a more generic office market will evolve, he said.

The two operating system providers currently competing reflect this scenario. Go has already trained some 200 developers and will probably attract more attention from corporate developers and small start-ups.

Pen Windows is still under development and is expected to ship by the end of the calendar year. Pen Windows may do a better job of attracting support from industry heavyweights that already offer Windows applications for the business market.

Obviously, porting their software to Go's Penpoint will require a greater effort. However, 35 vendors, including Lotus, Novell, Inc., Claris Corp. and Wordperfect Corp., have said they will support Penpoint.

PATRICIA KEEFE

With pens poised

Among the key companies driving the fledgling pen-based or stylus system market are the following:

- **Go** built a handwriting-based operating system called Penpoint, which has a notebook user interface and gestures, or pen commands.
- **Microsoft** will add some 30 application programming interfaces to Windows 3.0 to support the pen environment. Windows applications can then be easily ported to pen systems, ensuring availability of a large amount of software in a short period.
- **Grid** was the first to enter this market and has already sold an estimated 10,000 DOS-based Gridpads. It has promised to ship a new notebook running under Penpoint this year.
- **Slate** is shipping a developer's version of its database engine-based Professional Applications Development System.
- **IBM** and **NCR** are Go licensees and plan to develop pen-based computers at some point. IBM is expected to support both Penpoint and Pen Windows.
- **Wang** is shipping its Free-Style stylus and is said to have three pen-based prototypes in development.

PATRICIA KEEFE

COMMENTARY

Jean S. Bozman

Pacific Rim possibilities

The meeting room in the Fairmont Hotel was so quiet, you could hear the cable cars outside on hilly California St. That is, if you were listening. The 40 executives in San Francisco for the International Computers & Communications conference, however, were looking straight ahead, eager to hear about the upside — and the downside — of forging international partnerships across the Pacific Ocean.

The good news is clear: New markets are opening up in the Pacific. That should provide U.S. firms with additional sources of revenue and profits — even if those profits don't come right away.

The bad news, however, persists: Somehow, firms have to protect their "core technology" from being taken away by cash-rich partners who get too close. The risks of partnership, especially for smaller firms trying to raise capital through foreign investment, can be staggering, speakers warned.

"Sacrificing the company's long-term success for quick money is something to avoid," said Masazumi Ishii, managing director of Azca, Inc., an international business development firm in Redwood City, Calif. "It's possible that the investment partner may use the relationship only to extract the small company's core skills."

Ishii looks for good matches between Silicon Valley firms and cash-rich Japanese companies. "These relationships are like marriages," Ishii noted. "They cannot work unless both parties make a conscious effort to get [them] to work."

Rhea Serpan, vice president of international services operations at AT&T, said he saw no need to hide state-of-the-art technology, provided there were legal limits to the relationship. That policy has served AT&T well in South Korea and in Indonesia, where long-term relationships paid off with repeat business.

"There was a time when people thought they didn't need to lead with their technology," Serpan said. "To protect their core technology, they would only share technology that was three or four years old," he noted. "Now, things are moving so quickly that to stay a week behind state of the art is to stay a generation behind. The time line is just collapsing."

However, Serpan added, before sharing important technology secrets, care must be taken to consider the consequences. "Both parties need to have a high degree of trust and confidence in what's going to happen next." The legal consequences of inventing such international partnerships are not clear, but there were some lawyers in the audience busily taking notes.

But even before legal lines are drawn there is the question of policy: How do the actions of a U.S.-based multinational firm — or a transnational firm that owes its allegiance to no country — affect national policy?

Bradley P. Holmes, U.S. coordinator for international communications and information policy, monitors these situations. "It's no secret that there's an ongoing debate about how involved the U.S. government should become in industrial policy," Holmes said. "In the last administration — and in this one — there has been a tendency to let the market determine which company will win or lose. Our market has been very open in that respect."

Sadly, Holmes noted, some opportunities have already passed by, "opportunities in which the U.S. could have capitalized on technology" to further its industrial policy. One such missed chance, he said, is high-definition television (HDTV) technology. Ironically, he noted, a particularly steep learning curve in the HDTV area could be giving U.S. firms a second chance to get in on something approximating the ground floor. Thus, government's hands-off approach to the technology marketplace is still preferable, he said. It creates as many winners as losers.

U.S.-based firms, it seems, would be well-served to look out for their own best interests — and to bring their corporate lawyers on the long, 13-hour airplane trip to the other side of the Pacific.

Bozman is *Computerworld*'s West Coast senior editor.

Beijing Stone looks to the West

Private firm succeeds at home, seeks internationalization

BY DON TENNANT
IDG NEWS SERVICE

HONG KONG — The privately held Beijing Stone Group Corp., China's largest computer company, is aiming to expand its operations beyond the mainland in a bid to become "China's IBM." With revenue reportly five times that of state-run Great Wall Computer, the company could be on track to do just that.

Duan Yongji, first vice president at Beijing Stone, spoke about his firm's pioneering efforts at China Computer '91, a symposium held here last month under the auspices of Framingham, Mass.-based research firm International Data Corp.

"Stone has set a long-term target for itself to become China's IBM," Duan said. "Of course, we don't mean that we will be on par with IBM someday."

Rather, Duan explained, "our purpose is to open an oasis in the desert of China's high-tech industry, to explore the possibility of commercializing results from scientific research and to attempt setting up an efficient enterprise with Chinese characteristics."

Beijing Stone was established in Beijing in 1984 with a $3,800 loan from a township in the Beijing suburbs. Asked to explain who actually owns the company, Duan simply said that it is owned by its employees — roughly 2,000 workers in factories operating in Beijing, Tianjin, Zhongshan as well as other provinces.

That employee ownership plan attracts the most highly skilled personnel China has to offer. The company is permitted to hire whomever it chooses, Duan said, and it can afford to be selective: There are 100 applications for each job opening.

In its first four years of operation, Beijing Stone grew 300% each year. That rate dipped to 60% in 1989, when the company's former president, Wan Runnan, was named an enemy of the people because of his involvement in pro-democracy protests. Wan has since fled to France, where he set up an unaffiliated company under the Beijing Stone name, funded by Taiwanese interests.

The presidential post at Beijing Stone is still vacant, leaving Duan as the corporate head. After close scrutiny of Duan and the company, the Chinese authorities decided to allow Beijing Stone to remain intact — and despite the political difficulties, the company has flourished. Since 1984, Beijing Stone has logged cumulative sales of approximately $670 million, $230 million of which was earned in 1990. Duan projected a further increase of 50% this year.

Climbing to the top

Beijing Stone began its climb in what appears to be typical Chinese fashion — acting as a value-added reseller and service provider for foreign companies.

Now that Beijing Stone has accumulated $38 million in capital, however, it is set to move to what Duan called the "taking-off stage."

"In this second stage, we will aim at breaking into the international markets while doing everything we can to industrialize the Stone Group," Duan said.

"Judging by the government's policy toward high-tech enterprises, a non-state-run organization like Stone cannot survive without a factory to manufacture its own products," Duan noted. "In the past 40 years, state-run factories in China have developed a large capacity for turning out machinery and electronic products. But that capacity has not been brought into full play. It is highly possible for Beijing Stone to supplement these state-owned industries and [for both] to develop together."

Duan said that in order for Beijing Stone to survive, it has to constantly adjust the balance between research and development, industrial production and trading.

"We want the products manufactured by our own group to [make up] more than 80% of the total sales revenue in three years. To reach this goal, we will not try to set up factories to manufacture complete product lines. Instead, our practice will be to have a number of the best products turned out by a group of factories in coordination with one another."

An international presence

Establishing a foothold in the international marketplace will be the secret to Beijing Stone's success in the long term, Duan said.

"Whether to improve our own performance as a high-tech company or to develop into an export-oriented enterprise, it is imperative that our company should become internationalized.

"Our company would fall short of a high-tech enterprise," he explained, "if we did not build up close links with the main high-tech product market and if our own products could not break into the world market."

Tennant writes for Computerworld Hong Kong.

A good mailing list is hard to find.
But ...
Look no further.
You just found one.

The Computerworld
SUBSCRIBER LIST

- Select from over 135,000 IS professionals in both computer and non-computer related industries.
- Target to CEO's with high purchasing power.
- Mail to mainframe, mini, micro computer or LAN involvement.
- Get the mailing list where the subscribers pay to receive each and every issue.

Call 1-800-343-6474, ext. 745
(in MA, 508-620-7745).
Ask for Chip Zaborowski
or FAX your request: 508-653-6155

Give us your name and address and we'll send you additional information on the Computerworld subscriber list.

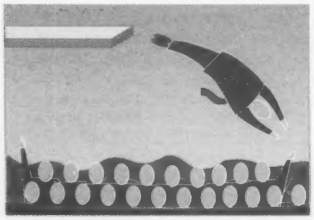
COMPUTERWORLD
IDG COMMUNICATIONS List Services

Industry groups add zest to IS careers

BY JILL VITIELLO
SPECIAL TO CW

Information systems professionals are keeping their careers fit for the fast track by joining industry associations and user groups. These organizations offer opportunities for networking and establishing a professional reputation that can lead to career advancement.

Even during a recession, user groups and industry associations offer ways to find new employment. Generally, every group and association offers professional development through monthly meetings and periodic conferences that feature workshops, seminars and question-and-answer sessions with industry experts.



Sharing career ideas and strategies with a national network of professionals is so attractive that several large groups such as the Data Processing Management Association and the Society for Information Management (SIM) are compiling data banks of their members and their areas of expertise. Soon, members will be able to do a computerized search to locate colleagues around the country who can answer specific questions about hardware, software and particular applications as well as career questions.

IS professionals can also benefit from industry and user group involvement in every phase of their careers.

For novices, professional organizations offer an entry into the industry and guidance in getting established.

"Many IS professionals get the maximum value from joining an industry group at the beginning of their careers because they find instant mentors," says Elliot Masie, director and founder of the Association for Computer Training and Support in Raquette Lake, N.Y.

For programmer/analysts or midlevel managers, the groups provide a cadre of colleagues across corporate borders from whom they can get career advice and technical opinions on vendors. "Belonging to a group also keeps you up to date with technical information, teaches you new skills and provides an inexpensive way to further your education and increase your management abilities," says Ben Parke, planning analyst at Burlington Industries in Greensboro, N.C., and president of Guide International, an IBM users group.

For IS executives, professional associations offer the ability to network within industry groups to find qualified people to fill jobs on their staffs.

For example, Harvey Shrednick, vice president of information services at Corning, Inc. in Corning, N.Y., and a member of the public relations committee for SIM, has used his SIM contacts to locate two high-profile managers for his IS department.

Shrednick views SIM not only as a good source of IS talent but also as a necessary feedback mechanism. "I can compare what I do with what other people are doing," he says. "That helps me do a better job at Corning."

While there's something for everyone, members say the way to get the most out of these associations is to become a volunteer. By doing so, an IS professional can achieve higher visibility in the technical industry.

Sam LePore, manager of technical services at Kaiser Permanente in Walnut Creek, Calif., and MVS group officer of Share, an IBM user group, says one of the chief advantages of taking an active role in industry groups is that it allows you to develop skills that might not ordinarily be learned on the job.

"I've learned to speak in public and to handle conflicts by moderating committees staffed by technical people who have strong opinions. That experience has helped me grow on the job as a manager," he says.

LePore adds that his involvement in Share has given him a broader understanding of the industry, which has translated into a reputation for high credibility among his firm's executives.

Some volunteers even go on to become sought-after speakers.

For example, LePore remembers how one IS professional's decision to become active in the organization helped her achieve an international reputation as an expert.

"This technical specialist had attended Share meetings for five years but had never done a presentation. When she realized that an application she developed at her company would be useful to others, she wrote a paper and presented it at a meeting. It was a rousing success," he says. Now she gets requests from all over the U.S. and Europe from people who want to learn more about her methodology, he adds. Industry recognition enhanced the woman's status with her own employer as well because the company realized they have a star in their midst.

Vitiello is a speech writer and freelance journalist based in East Brunswick, N.J.

Group goals

While user groups and industry associations both offer career advancing bonuses, they do boast distinct differences.

The objective of user groups is to influence the direction of vendor companies, according to Guide President Parke. Most software and hardware manufacturers support the user groups and listen to their advice and wishes, which gives members significant power in determining future enhancements and upgrades to the products they use.

Professional societies, on the other hand, are not equipment-based and do not wield the same kind of influence on manufacturers. Organizations such as the Data Processing Management Association and SIM focus their attention on predicting and preparing for industry trends, helping members process the vast amounts of information with which they must keep current to do their jobs well and providing broad-based solutions for potential problems within the industry.

Director of Decision Support Systems

Dartmouth College seeks an energetic and experienced person for Director of Decision Support Systems. Reporting to the Director of Computing, this key position will be responsible for planning, implementing, and administering decision support systems, coordinating them with other institutional systems. Dartmouth College consists of the Faculty of Arts and Sciences and professional schools of engineering, business and medicine. Long a leader in computing, Dartmouth is a completely networked residential campus where essentially every staff member, student, and faculty member has the use of a personal computer (predominantly Macintosh). Dartmouth also supports an array of mainframe computers. Most host-based administrative computing utilizes VAX/VMS systems and SQL.

Experience in higher education is strongly desirable. Strong and mature interpersonal skills are critical. Candidates must be familiar with decision support systems in environments with similar qualities to Dartmouth (network and personal computer homogeneity and saturation, large institution-wide base of non-computing professional administrators as information consumers). Primary service emphasis will be placed on senior management of the institution. The successful candidate will be able to demonstrate convincingly the ability to plan, design, specify, and implement a decision support system. Technical experience in database methodology and design, with personal computers and host-based systems is required.

Minimum qualifications: Master's degree and six to eight years of experience or the equivalent. This position is funded for a minimum of two full years, with a very strong expectation for permanent continuation.

Send a letter of application, CV and the names and telephone numbers of three references to: Larry Levine, Director of Computing, Computing Services, Kiewit Computation Center, Dartmouth College, Hanover, NH 03755.

Please respond via U.S. mail. Acknowledgment of receipt of application will be sent, along with a job description. The review of applications will begin 24 June 91, and will continue until the position is filled.

Dartmouth College is an affirmative action/equal opportunity employer. Minorities and women are encouraged to apply.

Dartmouth College

Choose from 100s of new '91 career openings

Contact any member of our coast-to-coast network of DP placement specialists & gain access to *ALL* of our choice openings in your field!

HERE'S A PARTIAL LISTING OF CURRENT FEE-PAID OPENINGS

VP INFO TECH To $130,000
HPS IEF ADW. Fin. Services

EXPERT SYSTEM A/I $75,000+
8-15 yrs. CAE/CAD/CAM exp.

MANAGER LAN/WAN $60-70,000
Knowledge of OS/2 LAN Mgr.

PAYROLL SYSTEMS MGR. $55K
"Fortune 500" Co. New Dev.

"BIG SIX" CONSULTANT $65K
Communications/Voice or Data

DATABASE ADMINISTRATOR $ OPEN
IDMS Install. & Tuning Exp.

NATURAL P/A POSITIONS $50K
Any Hardware

KNOWLEDGE ENGINEER $50,000
5+ yrs. CASE Expert Syst. exp.

IBM COBOL MVS IEW DB2 $55K
CICS Maj. modernization proj.

PC/LAN SPECIALISTS $55K
Extensive PC Exp. MS/DOS OS/2

SR. CICS/DLI SPEC. To $55K
5+ years exp. Learn DB2

SYSTEMS ENGINEER To $51K
C UNIX or VMS and INGRES

VAX PROJECT MANAGER $50K
VMS/C, RDBMS. Mfg., Realtime

DB2 PROGRAMMER/ANALYST $50K
Manufacturing Application

IDMS ADSO PROG/ANALYSTS $40K
Contract or Permanent

SYSTEMS PROGRAMMERS $ OPEN
CICS or VTAM-NCP Specialists

C or C++, UNIX $43K
Business Applications

IBM IMS DB/DC SR. PA $ OPEN
Banking DDA Experience

PROGRAMMER ANALYST $40K
CICS Batch & On-line

AS400 or 38 RPGIII To $40K
SYNON or PRISM

SR. P/A 4+ yrs. exp. To $38K
COBOL, IMS, DB/DC MVS

AS/400 SYSTEM INSTALLER $35K
Fluent Puerto Rican Spanish

CICS COBOL PROG. To Low $30s
MVS/OS. 2 yrs. exp.

AS/400 PROG/ANALYSTS Mid $30s
RPG III, Various Applics.

Call or FAX your resume to the office nearest you, & put our entire network to work for you.

ATLANTA: DataPro Personnel Consultants (404) 352-9880 • FAX (404) 352-1177
BOSTON: Robert Kieven & Co., Inc. (617) 861-1020 • FAX (617) 861-1047
CHICAGO: Career Cons. Assts. Inc. (708) 986-1752 • FAX (708) 986-1762
CINCINNATI: Tash Group (513) 621-8275 • FAX (513) 621-6311
CLEVELAND: Innovative Resources Corp. (216) 331-1767 • FAX (216) 331-3490
COLUMBUS: Michael Thomas, Inc. (614) 846-0626 • FAX (614) 847-5633
DALLAS: DataPro Personnel Consultants (214) 661-8600 • FAX (214) 661-1309
DENVER: Abacus Consultants, Inc. (303) 759-5054 • FAX (303) 759-5095
FLORIDA: Michael James & Associates (813) 786-0807 • FAX (813) 791-4850
GREENSBORO: DataMasters (910) 373-1401 • FAX (910) 373-1991
HOUSTON: Career Consultants, Inc. (713) 629-4100 • FAX (713) 629-4106
KANSAS CITY: DP Career Associates (913) 236-8888 • FAX (913) 236-8749
LOS ANGELES: Superior Resources, Inc. (818) 884-3000 • FAX (818) 884-3456
MEMPHIS: Information Systems Group (901) 684-1030 • FAX (901) 684-1689
MILWAUKEE: EDP Consultants, Inc. (414) 797-8888 • FAX (414) 476-7972
MINNEAPOLIS/ST. PAUL: ESP, Inc. (612) 338-0714 • FAX (612) 337-0190
NEW JERSEY: Systems Search (201) 761-4400 • FAX (201) 761-0120
NEW YORK: Sofal Associates, Inc. (212) 227-7370 • FAX (212) 964-5033
PHILADELPHIA: Systems Personnel, Inc. (215) 563-5680 • FAX (215) 563-1462
PHOENIX: Professional Career Consultants (602) 274-6486 • FAX (602) 443-8439
PITTSBURGH: Allied Enterprises, Ltd. (412) 261-7200 • FAX (412) 392-2366
ROCHESTER: Traynor Confidential Ltd. (716) 325-6610 • FAX (716) 325-1077
SAN DIEGO: Technical Directions Inc. (619) 267-5611 • FAX (619) 267-0951
SAN FRANCISCO: Professionals For Computing, Inc. (415) 957-1400 • FAX (415) 957-0186
SEATTLE: Houser, Martin, Morris & Associates (206) 453-2700 • FAX (206) 453-8726
ST. LOUIS: Executive Career Consultants Inc. (314) 994-3737 • FAX (314) 994-3742
SYRACUSE: Information Systems Staffing, Inc. (315) 449-1838 • FAX (315) 449-1939
WASHINGTON, DC: Vista Computer Services (703) 222-1900 • FAX (703) 222-1930
AUSTRALIA + LONDON + TORONTO
Contact U.S. firm nearest you

Ask for your FREE copy of our 1991 Salary Survey

National Computer Associates

INDUSTRY CURRENTS

Government looks to attract IS execs

Better benefits, job security used to draw IS workers from the public sector

BY CHRISTINE CASATELLI
SPECIAL TO CW

The federal government, which spends more than $17 billion annually on computers and communications, is ringing the dinner bell for information systems professionals who are hungry for jobs.

The catch is that the government generally offers salaries that are lower than those in the corporate world. For example, a senior IS executive at the Social Security Administration could expect to earn roughly $70,000, while a corporate paycheck for the same job might be closer to $100,000, says Cary Green, commissioner for systems planning and integration at Social Security.

Many IS professionals, however, are willing and anxious to make the break for the public sector anyway, according to recruiters. As the recession takes its toll on the high-technology industry, computer professionals are finding that job security is more valuable than high pay and job perks.

Many opportunities

Agencies in the federal government that are offering abundant opportunities to IS professionals include Social Security, the U.S. Department of Defense (DOD), the National Cancer Institute and the Federal Bureau of Investigation. Current efforts to modernize big-ticket, high-profile systems in these agencies means more openings for professionals who can capitalize on the management and technical skills they have picked up in the private sector.

A longtime devotee of high technology, the DOD currently spends more than $9 million annually to buy and maintain its automated information systems, according to Pentagon spokeswoman Susan Hansen.

Number of federal civilian full-time computer specialists*

1981	30,617
1983	34,760
1985	40,122
1987	44,033
1989	49,042
1991	No projection

**Computer specialist* includes computer programmers and systems analysts at all grade levels. The title does not include clerks or computer operators

Source: U.S. Office of Personnel Management

Although the DOD is cutting back in most areas, budgets for computers and communications are actually growing because officials see automation as a way to keep costs down, she says.

In January, the Pentagon launched its Corporate Information Management program to consolidate information systems that handle departmentwide business applications such as payroll and accounting.

The goal of the Pentagon program is to find and eliminate systems that are duplicated among the armed forces and group them together under a single set of DOD architectures. The DOD estimates that it will save $847 million over four years through the program, Hansen says.

One of the largest computer operations on the civilian side of the federal government is Social Security, whose charter requires it to manage more than $270 billion in government payments each year.

With an annual software and services budget of $200 million and a systems staff of 2,700, Social Security is processing information on a scale most corporations cannot even imagine. With so much data flowing back and forth, Social Security is always looking for highly qualified people to fill critical computer posts.

The administration's National Computer Center in Baltimore houses a colossal benefits system, responsible for churning out checks for 40 million recipients on time each month. Conducting 12 million transactions per day over a network that links 40,000 workstations, systems staff members keep their hands full.

To round out its high-technology ranks, Social Security regularly looks for people with experience in voice and data communications, MVS and Cobol. "We're also beginning to develop requirements for intelligent workstations and local-area networks," Green says.

Social Security is supplementing it 40,000 dumb terminals nationwide with 8,000 personal computers to help with administrative functions. Spokesman Frank Battistelli says that the PCs will eventually be linked to LANs and then wide-area networks to help the centralized Social Security operation migrate to a more distributed processing arrangement.

IS professionals can also investigate opportunities at the National Cancer Institute, which is currently developing new formats on which to distribute its Physician Data Query cancer research database.

In addition, the National Cancer Institute is operating under a congressional mandate, "so we have enough program resources to make sure we are on the cutting edge," says Susan Hubbard, director of the international cancer information center.

At the cancer information center, programmers enhance and maintain the Physician Data Query cancer research database, which provides reports on the latest therapies, research and literature. The systems staff is also responsible for distributing the database in all different types of formats, including compact disc/read-only memory.

Some projects under development include software that will transmit cancer information from the database to fax, as well as workstations that will use expert systems and electronic medical records.

Technical professionals who always wanted to work for the FBI may get their chance when the agency begins modernization of its National Crime Information Center (NCIC). The FBI is revamping the 24-year-old center and turning it into an investigative network for the next century in a project called NCIC 2000.

"We definitely need people who are going to be able to help us monitor the contractors' performance in NCIC 2000," and the best people to do that are former contractors, says Thomas Walczykowski, FBI assistant section chief for systems.

AS THE RECESSION takes its toll on the high-technology industry, computer professionals are finding that job security is more valuable than high pay and perks.

The tricky part will be finding people with expertise in both multimedia techniques and project management. "I'm getting a lot of applications from senior people with 10 or more years' experience," Walczykowski says.

Resumes from former government contractors and other IS executives who are out of work or retired are flowing into the bureau at a steady pace, he says.

Though the FBI can offer these computer professionals only $40,000 to $50,000 per year, when they may be used to earning tens of thousands more, the interest is still strong.

Casatelli is a free-lance writer based in Washington, D.C.

PROJECT MANAGER
MANUFACTURING

Have you been consistently successful at project development and implementation that has EXCEEDED your customers' expectations? If so, our dynamic MIS Group needs your leadership skills to coordinate and implement key projects.

The selected candidate must have BBA with MIS emphasis, 5+ years experience in systems analysis in a manufacturing environment, knowledge of DEC VAX and/or IBM mainframe computers, excellent organizational and communication skills, and demonstrated project leadership experience. Experience with MRP systems helpful, but not required. Depending on the project, 25-50% nationwide travel is possible.

With its friendly people, affordable lifestyle, world-class cultural amenities, and wealth of year-round opportunities . . . you'll find Milwaukee is "a Great Place on a Great Lake". If you are ready to step up to this opportunity for challenge and career growth, send resume ***with salary history*** to **Human Resources (X-65), Johnson Controls Battery Group, Inc., 5757 N. Green Bay Ave., P.O. Box 591, Milwaukee, WI 53201.** (Principals Only)

JOHNSON CONTROLS

Equal Opportunity Employer M/F/H/V

Sunbelt Opportunities

TELON Prog/Anal's	34-43K
ASSEMBLER Prog/Anal's	30-35K
DB2/SQL Prog/Anal's	30-40K
CICS Prog/Anal's	30-37K
IMS DB/DC Prog/Anal's	30-37K
PL/1 Prog/Anal's	32-36K
IDMS-ADS/O Prog/Anal's	32-38K
FOCUS Prog/Anal's	33-40K
AS/400-S/38 Prog/Anal's	30-38K
TANDEM Prog/Anal's	30-40K
HP 3000-COBOL Prog/Anal's	30-37K
VAX/COBOL Prog/Anal's	32-36K
ADABAS/NAT Prog/Anal's	30-37K
ORACLE/SQL Prog/Anal's	35-45K
MSA or M&D Prog/Anal's	33-45K
DB2 or IMS DBA's	40-53K
EDP Auditors	33-46K

North Carolina's largest employment agency in business since 1975. 300 affiliates. Opportunities in the Southeast and Nationwide.

Corporate Personnel Consultants
3705-320 Latrobe Drive, Box 221739
Charlotte, NC 28222 (704) 366-1800
Attn: Rick Young, C.P.C.

TANDEM
COBOL, PATHWAY,TAL, SCOBOL,C, SQL,X.25
STRATUS
PL1,COBOL,C,ON/2
Fulltime/Consulting Positions available in the US/ABROAD
VAX MUMPS ORACLE IBM
STRATEM COMPUTERS INC.
Call Irwin
800-582-JOBS
FAX (212)967-4205
124 W. 30th St. Suite #302
New York, N.Y.10001

For more information on our professional services & opportunities, contact us by mail, fax or call:

The Computer Merchant, Ltd.
BOE/AA

CONSULTANTS

Announcing our Newest Port of Call:
ATLANTA, GA

The Computer Merchant, Ltd. continues to meet the challenges of the technological marketplace, linking top-notch software professionals with business needs across the United States. Since 1978, Fortune 500 firms have relied on **The Computer Merchant** to chart the course for software integration solutions.

As demand for our services expands, the search for talented experts grows. Current opportunities for professionals with 3 or more years experience include:

MUMPS Developers	ALL-IN-ONE P/A's
VAX/CIMTELLIGENCE	IMAGE PLUS
ULTRIX/UNIX System Managers	JAD/CASE TOOLS
IBM IEW/ADW P/A's	UNIX/'C' NFS/RPC
ACMS/RDB	QA - UNIX/SQL
EASEL Development	VAX 9000 System Manager
COMETS/AIM Analyst	PMNS3 Development

449 Pleasant Hill Road, Suite 301, Lilburn, GA 30247
(404) 279-8009 FAX: (404) 279-8160
180 Newport Center Dr., Suite 180, Newport Beach, CA 92660
(714) 720-8435 FAX: (714) 720-3779
CORPORATE HEADQUARTERS
80 Washington St., Building E, Norwell, MA 02061
(617) 878-1070 FAX: (617) 878-4712

Join the Leader in COBOL Applications Development Software

At Micro Focus, we develop and sell the world's leading application development software for professional COBOL programming on micro-, mini-, and mainframe computer systems. Explore these opportunities to share in our success.

Sales Support

All Regions

You will provide technical field support for our Fortune 1000 customers. You will manage major account activity, demonstrate products and consult with customers. Extensive travel within regional areas is required. Excellent presentation skills and 5+ years' experience in COBOL application design and programming with a working knowledge of CICS™ or IMS™ required. Systems engineering and PC experience desired.

Product Training

Palo Alto, Philadelphia, Chicago

You will train experienced COBOL programmers on the use of Micro Focus products. You will teach courses at our training centers and customer locations. Extensive travel required. Candidates should have 3+ years' experience teaching technical computer courses. COBOL programming experience required.

File Handling Product Manager

Palo Alto

You will have full product responsibilities for Micro Focus file handling products. Requires 8+ years in DBMS design and implementation in transaction processing environments, preferably including mainframe systems. Strong communication and interpersonal skills essential. Project and product management experience preferred.

We offer a competitive salary and bonus compensation package. For immediate consideration, please send your resume to Micro Focus, Inc., Dept. HR-DKM, 2465 East Bayshore Road, Suite 400, Palo Alto, CA 94303. Principals only, please. EOE, M/F/H/V.

Trademarks are registered to their respective companies.

MICRO FOCUS®

A Better Way of Programming™

Log On For Opportunities At Boeing

Bring us your computer skills, a talent for communication, and the desire to do something important, and we'll give you an opportunity to make a significant contribution.

Boeing is looking for the brightest people to help us provide world-class computing services to hundreds of commercial and government customers.

We're growing, expanding and doing important work in a broad range of computing disciplines.

So check out the opportunities. If your skills and experience match our requirements, get in touch.

Here's How To Get In Touch

Please send your resume, with current and expected salary, to *Boeing Computer Services Workforce, P.O. Box 3707-PAA, M/S 7U-81, Seattle, WA 98124.*

Or fax your resume, in strictest confidence, to our 24-hour fax line: *(206) 965-7431.* Please note "PAA" on your resume.

Principals only, please. We are an equal opportunity employer.

Here's What We Need

Computer Professionals with at least 3 years experience in the following skills:

- Artificial Intelligence
  - Manufacturing Applications
- Business Systems
  - IBM Large Scale (COBOL, JCL, IMS/DC, DB2, TSO ISPF, PS2/OS2, WINDOWS)
  - IMS Database Administration/Modeling
  - TANDEM (COBOL/TAL/SCOBOL/SQI/ORACLE)
  - STRATUS (Systems Administrator, Programmers, Performance Analysis, Configuration Control)
  - UNIX (C, C++, X-WINDOWS)
- Operating Systems
  - MVS/VM, MVS/JES, CRAY, DEC/VAX, IMS, TANDEM
- Scientific Systems
  - Engineering Workstations (CAD/CAM/CIM, SUN, APOLLO, CATIA)
  - Manufacturing Systems
  - Systems Architecture/Integration
- Telecommunications
  - MAP/TOP, TCP/IP, LAN, E-Mail, Token Ring, Ethernet
  - Configuration/Protocol

BOEING

FLORIDA D.P. CAREERS

Immediate openings for professionals with one of the following skills:

DB2/SQL	CASE TOOLS
CICS	PATHWAY/SCOBOL
FOCUS	VAX
AS400-S/38	UNIX
IDMS	IMS
ASSEMBLER	HP3000
TANDEM/TAL	PL/1
INFORMIX	M&D OR MSA
ORACLE	S/P MVS
IMS DB/DC	PC/C
DBA/DB2	AA/DCS

Call or send resume to COMPUTERPEOPLE, Dept. 510:

2005 W. Cypress Creek Rd., Ste. 3
Ft. Lauderdale, FL 33309
800-777-8603
305-771-8603

12225 28th Street N.
St. Petersburg, FL 33716
813-573-2626

20 N. Orange Avenue, Ste. 1400
Orlando, FL 32801
800-888-1064

COMPUTERPEOPLE
"Your Next Job Is Our Business"

MVS • VTAM • CICS DBMS • JES3 INTERNALS

START-UP IBM M/F SYS SOFTWARE VENDOR

ARE YOU TIRED OF: DEAD END MAINTENANCE, MANAGEMENT SHUFFLES, CORPORATE POLITICS

THEN TRY THIS: NEW PRODUCT DEV., ONE BOSS, CASUAL ENVIRONMENT, FLEX-TIME

ROYALTIES & STOCK • 40-100K EXPENSE ACCOUNT • RELO • TRAVEL

WE NEED 60+ DEVELOPERS, S/E 'S S/P'S FOR THE FOLLOWING MVS & BAL PRODUCTS IN SD, CAL, ND, CAL & COLORADO!

★ MVS/DOS - VTAM & CICS FILE TRANSFER /ACCESS & MVS, JES3 & CICS AUTOMATED LIBRARIAN & DISASTER RECOVERY PRODUCTS ★

- THESE PRODUCTS DOUBLED PROJECTED REVENUES AND ARE STILL CLIMBING !!! ON LINE FILE TRANSFER , STORAGE & FORWARDING COMM PRODUCTS & NETVIEW ENHANCEMENT & PERFORMANCE TOOLS REQ'S EXP W/RE-ENTNANT BAL & VTAM OR CICS INTERNALS. LU6.2, SNA, ISPF, 3270, C, 4th GLS & OS2 A+ - AUTOMATED LIBRARIAN, TAPE MGMT, DISASTER RECOVERY, REMOTE SITE RECOVERY, FILE JOURNAL & HOST SOFTWARE REQ'S EXP W/ RE-ENTNANT BAL MVS & JES3 OR CICS INTERNALS, C, JES2, VSAM, FILE HANDLERS, EBA, AI, AUTO OPS, UNIX, OS400 & PC'S A+

☆ MVS/DBMS (DB2) SECURITY & INTEREST RATING RULES BASED DMGL CASE & AI/4G KNOWLEDGE BASED/EXPERT SYSTEMS CUSTOMIZED TOOLS ☆

- THESE PRODUCTS HAVE NO COMPETITORS BECAUSE NO ONE ELSE HAS DEVELOPED THEM YET!! PRODUCTS - 5th GLS, REPOSITORIES, CASE TOOLS & A RELATIONAL DBMS SERVER TO ALLOW ACCESS FROM PC'S TO DB2, ORACLE, ETC ON THE MAINFRAME HOST VIA VTAM ETC. THESE REQ BAL, MVS INTERNALS & SOME DBMS EXP. DB2 INTERNALS, 5th GLS, FILE HANDLERS, OCS & AI, A+ - AI & AO KNOWLEDGE BASED TOOLS REQ EXP W/AI & RULES BASED DATA MODELING, MVS, DB2 FOCUS, DBMS, BAL, C, 4th GLS, LISP, PROLOGUE, EXPERT SYSTEMS, VAX, UNIX & CASE A+

- THE RECESSION IS OVER, IF YOU HAVE ANY OF THE ABOVE EXPERIENCE, QA, SALES OR TECH WRITING

CALL WAYNE CARTER AT OUR CAREER HOTLINE TODAY
FOR A FREE TICKET TO CALIFORNIA
213-658-1550 FAX 213-658-1570
6380 WILSHIRE BLVD #1108 LOS ANGELES, CA 90048

CONTRACTORS

ALL TECHNICAL SKILLS

NATIONWIDE REQUIREMENTS

Maximize your exposure and your billing rate. We mail your resume to brokers nationwide at no cost to you. (AS/400 in particular demand)

Send your resume to:

JKL Enterprises, Inc.
900 North College, Suite 100
Charlotte, NC 28202

FAX: (704) 333-0233
Or Call: (704) 342-9519

PROGRAMMER ANALYST

The Denver Water Department is recruiting a Programmer Analyst to perform a variety of professional activities.

Strong experience with:

- DEC/VAX, RDB and RMS.
- Knowledge of COGNOS POWERHOUSE, 4GL, COBOL.
- BSCS or related field +3 yrs. recent experience.

Starting salary range $2854 - $3146 per month (DOQ)

Excellent benefits package

Please send a letter of application and your resume to the:

Denver Water Department
Personnel Office
1600 W. 12th Avenue
Denver, CO 80254

Denver residency required within 9 months of employment.

EOE M/F

HONG KONG POLYTECHNIC
Department of Computing

Principal Lecturer in Software Engineering (other areas of interest are: Automated System Development/Artificial Intelligence)
HK$413,940 p.a. - $534,060 p.a. (US$1 = HK$7.793 as at 22.5.91)

Candidates should have (a) a first degree or equivalent professional qualification and a PhD degree; (b) good publication record or evidence of contribution to research and development; (c) evidence of successful leadership in a subject area; and (d) knowledge of current software development methodologies and their management.

Terms and Conditions of Service: Appointment initially on 2-year contract with a 25% terminal gratuity. Benefits include leave, medical and dental schemes, subsidised housing and children's education allowance.

Applications including curriculum vitae and names of three referees should be sent to the **Gemini Secretary, Hong Kong Polytechnic, Hung Hom, Kowloon, Hong Kong** before June 24, 1991, (by fax (852)-764-3374. Further information is available from the same office.

PROFESSIONAL CONSULTING NETWORK

SAN FRANCISCO BAY AREA
CONTRACTS TO ADVANCE YOUR CAREER

NOMAD	Programmer/Analysts
FOCUS	Programmer/Analysts
Voice & Data	Telecommunication Specialists
RDBMS	DB2, SYBASE, INGRES, INFORMIX, ORACLE
IDMS	Programmer/Analysts

595 Market Street, Suite 1400
San Francisco, Ca 94105
(415) 777-4321 · Fax 777-8632

NACCB

"...Computerworld's Campus Edition gives us the most direct contact with our target audience of computer and engineering graduates."

- John Wilhite
Manager, Corporate College Relations
Hughes Aircraft Company

Hughes Aircraft, the aerospace electronics giant, is a full products company involved in the research, development, manufacturing, and support of over 100 different technologies. With about 55,000 employees in Southern California, Arizona, and Colorado, Hughes provides 12,000 separate products, services, and functions to the defense, space-related, and commercial industries worldwide. Since John Wilhite's job as Manager, Corporate College Relations is to oversee the recruitment of the country's top technology graduates, he advertises in *Computerworld's Campus Recruitment Edition.*

"Every year, Hughes recruits somewhere between 250 and 300 new graduates. The mainstream of our hiring centers around students with engineering backgrounds. Generally about 75% of our student recruits are in the electrical, mechanical, and computer engineering fields. Another 20% or so have scientific backgrounds, primarily in computer science and physics. The balance of our recruiting, then, is for MBA graduates with strong orientation in MIS or CIS. With one advertisement in *Computerworld's Campus Edition,* we get unique reach to all three of our student audiences.

"During the past few years, computer engineering and computer science graduates have become an increasingly important part of our recruitment efforts. So we need a publication that not only targets the exact audience we're trying to reach but also delivers quality responses. Based on the recruitment success of our first advertisement, we know *Computerworld's Campus Edition* gives us the most direct contact with our target audience of computer and engineering. It definitely generates quality responses from students with the right types of backgrounds.

"In addition to delivering advertising results, the issue's Annual Student Survey serves as an important research tool. Upon receiving data on how students typically view Hughes Aircraft, we felt we needed to strengthen our image in this area. For continued success in recruiting top technical talent, we find feedback like this invaluable.

"To be effective, it's essential that our recruitment advertisement appears in a quality publication that students will read. We know *Computerworld's Campus Edition,* with its meaningful content, will have a long shelf life. Clearly, it's a publication that students will take back to their rooms pass along to fellow students, and keep for future reference. That means our advertisement in *Computerworld's Campus Edition* keeps right on working long after the issue date.

"Again this October, we'll be relying on the cost-efficient reach of *Computerworld's Campus Edition* to take our recruitment message to engineering, computer, and business graduates at leading colleges and universities nationwide."

Computerworld's Campus Recruitment Edition. On October 31, 1991, this exclusive edition reaches 135,000 top students enrolled in America's top computer and engineering degree programs. It's an advertising vehicle that works for John Wilhite at Hughes Aircraft. And it's your best way to recruit America's best computer career students. For all the facts, call John Corrigan, Vice President/Advertising Director, at 800/343-6474 (in MA, 508/879-0700).

Your best way to recruit America's best computer career students ...

COMPUTERWORLD
CAMPUS EDITION

1 800 343-6474
IN MA 508 879-0700

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

Computerworld gives you large numbers of professionals who work in your industry.

When you're recruiting computer professionals, it's often important to find ones with experience working on systems specific to your industry. From manufacturing to banking, healthcare to insurance, Computerworld reaches the right people in every major industry.

Industry	Computerworld's Audience
Computer Vendor and Consulting	152,534
Computer Manufacturer	81,998
large-scale computers	38,160
medium-scale computers	47,528
small-scale computers	35,316
personal computers	49,128
technical workstations	25,526
Software Vendor	134,207
for large-scale systems	59,196
for medium-scale systems	77,372
for small-scale systems	63,545
for personal computers	78,973
for technical workstations	27,005
Non-CPU Computer Products Manufacturer	38,024
VAR/Dealer/Retailer	28,652
DP Service Bureau/ Contract DP Services	55,093
Consulting/Planning	89,851
Manufacturer (not computers)	174,028
Insurance	54,721
Healthcare	66,086
Banking/Financial Services	101,111
Government Federal/State/Local	112,768
Business Service (except DP)	41,407
Communications Systems	29,709
Public Utilities	55,627
Transportation	26,598
Wholesale/Retail Trade	113,584
Education	127,431

SOURCE: Skill Survey of Computerworld's Audience, May 1989.

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at **800/343-6474 (in MA, 508/879-0700).**

COMPUTERWORLD

Where qualified candidates look. Every week.

MANAGEMENT INFORMATION SPECIALIST: Will develop and implement a computerized information system for use in a multi-restaurant management consulting firm. Will establish information systems to allow centralized financial management of multi-restaurant facilities including budgeting and operations control systems. Will establish information software to analyze manpower flow, quality control of food service procedure, and analysis of management authority within individual restaurants for purposes of centralizing management and systems. Will create computer systems for individual restaurants to meet their specific needs and will network these systems into the main computer system for management analysis purposes. Requires Master's degree in Hotel & Restaurant Administration. Education to include completion of one course in each of the following: Computer & Information Systems, Business Applications of Computers, and two courses in Statistics. Hours: 11:00 a.m. - 7:00 p.m. 40 hours per week at $28,800.00 per year salary. **Must have proof of legal authority to work permanently in the U.S.** Please send resume to: Illinois Dept. of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605, ATTN: Joan Sykstus, Reference #V-IL 2540-S, NO CALLS, An Employer Paid Ad.

Applications Programmer/Analyst. Applicant must have Bachelors or Associate degree in Computer Science, or 2 full years of business programming/analysis experience. This individual must have the ability to perform Structured Design tasks using the IEW (or ADW) Design Workstation. Proficiency in both COBOL and DBXL is required as well as exposure to BASIC. Duties will include all tasks associated with Design, Coding, Testing of new applications in both a PC and IBM mainframe environment. Maintenance of existing programs is also required. Must possess good written and oral communication skills. Standard work week is 37.5 hours with flexible work hours. Starting salary will be $25,000 reviewed after first six months and annually thereafter. Send resume to Nebraska Job Service. Attention Bernie Childerston, P.O. Box 94600, Lincoln, Ne. 68509. Refer to Job Order No. 520-261.

DEC/VAX

We Specialize in the Search and Recruitment of MIS Professionals. We represent a number of companies that are offering challenging opportunities. Should you have an interest in discreetly evaluating a career move, contact us in complete confidence.

Professional Search Centre, Ltd
1450 East American Lane
Zurich Towers, Suite 1400
Schaumburg, IL 60173
FAX: 708-330-4456
Phone: 708-330-6336
All Fees Employer Paid

Computer Software Engineer wanted to analyze complex systems requirements; and design, develop, analyze and implement manufacturing, banking and health care systems on IBM 3090, PRIME 750, 850, CYBER 170/740 using DB2, TSO/ISPF, COBOL II, IMS/DB, DMS, JCL, CLIST, VSAM, SDF, CICS software and COBOL II, PASCAL, C languages under MVS/XA, MVS/ESA, PRIMOS operating systems; Requires Master's degree in Computer Science or Engineering and one year experience in the job offered or one year related experience as a Computer Systems Analyst/Programmer; $42,500.00 per year; 40 hours per week. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #36091 "Employer Paid Ad"

Computer Systems Engineer wanted to design, develop and implement Communications Systems on TANDEM, VLX, TXP, NS-II and IBM PC mainframes using PATHWAY, SQL and Case Tools software, "C", SCOBOL and TAL languages on TANDEM Guardian and MSDOS operating systems; Requires B.S. degree in Business Administration or Information Systems Management and one year experience in the job offered or one year related experience as a Computer Systems Programmer/Analyst; $35,000.00 per year; 40 hours per week, Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #29391 "Employer Paid Ad"

Senior Software Engineer wanted to analyze complex systems requirements; design, develop, implement and maintain manufacturing systems on UNISYS A Series, B-6900, UNISYS Workstations using BAMCS, UNIFY, DMS II, LINC II, COMS software; C, COBOL languages under MCP, UNIX operating systems; Requires Bachelor's degree in Mechanical or Computer Engineering and two years experience in the job offered or two years related experience as a Systems Analyst/Programmer; $42,000.00 per year; 40 hours per week. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #36491 "Employer Paid Ad"

COMPUTER PROFESSIONALS

Full service, total solution. This will be the key to success for the information technology consulting services industry in the 90's. Benson, Douglas & Associates, Inc. has adopted this *"total solution"* approach by building a three divisional firm which includes Business Solution Services, Project & Integration Support Services and Technical Contract Services. The diversity of each division not only satisfies the marketplace requirements, but creates an excellent career path for our staff professionals. Our steady growth provides opportunity for advancement from Programmer, Prog/Analyst, or Sys/Analyst to such positions as Project Leader, Project Manager and Field Support Manager.

Experience requirements include:

VAX - All Platforms, Languages & Disciplines
IBM - All Platforms, Languages & Disciplines
HP - All Platforms, Languages & Disciplines
Relational Databases - All Platforms
Workstations - All Platforms
UNIX/C - All Platforms
X/Windows - All Platforms

BD&A offers competitive salaries and an exceptional benefits package that includes medical/dental benefits, 401k, vacation pay and profit sharing.

Call, mail or fax resumes to:
113 Edinburgh South, Suite # 104
Cary, North Carolina 27511
Attention: Recruiting
Phone# (919)467-3357 or (800)525-2927
Fax# (919)467-7688
AN EQUAL OPPORTUNITY EMPLOYER

bd&a

COMPUTER PROFESSIONALS

Progressive leader in the software services industry has immediate needs for permanent and contract consulting Staff in the Southeast. Excellent salary and benefits including medical, dental, life, incentive bonus, and relocation assistance. Positions require 2 or more years experience in any of the following areas:

- COBOL, CICS, TSO
- IMS DB/DC
- ADABAS/NATURAL
- IDMS/ADSO
- HOGAN, DDA
- CPCS
- DB2, CSP
- DEC/VAX, FORTRAN, COBOL
- VAX, ORACLE, INGRES
- HP-3000, TRANSACT
- EDI
- CASE TOOLS

Send resume in complete confidence to:

SOFTWARE
Data Services, Inc.
4600 Park Road, Suite 300
Charlotte, North Carolina 28209

PROGRAMMER/ ANALYST OPPORTUNITIES

DB2	OS
CICS	COBOL
IEF	ORACLE
IMS	AS/400
TELON	EXCELLERATOR
IEW/ADW	APS/SUPRA

Minimum 2 years experience. Contact **Carl Hanlon, THE FORBES GROUP PROFESSIONAL SEARCH OF CHARLOTTE, INC., 6401 Carmel Rd., Suite 107, Charlotte, NC 28226. 1-800-438-2012; 704-541-1931 (FAX).**

A Terrific Opportunity

Computer Consulting Group, has immediate openings on its consulting staff for talented Programmer/Analysts with 2 or more years experience. Excellent salary & benefits. We're especially seeking:

- **ORACLE**
- **CSP**
- **IMS DB/DC**
- **FOCUS**
- **DB-2/CICS**
- **INGRES**
- **IBM 30XX**
- **DEC VAX**

Computer Consulting Group
Contract Professional Services

Servicing the Research Triangle Park and the Southeast area.
4109 Wake Forest Rd.
Suite 307
Raleigh, NC 27609
1-800-222-1273
FAX (803)738-9123
Member NACCB

PROGRAMMER/ ANALYST POSITIONS

SYSTEMS PROGRAMMERS

With at least 3 years experience in

* IMS DB/DC, DL1	* CICS
* NATURAL	* ADABASE
* PL1	COBOL
* DB2/SQL	* TANDEM
* VM/MVS	RPGII/III
* VAX/VMS	* IDMS/ADS/O
* FOCUS	* C LANGUAGE

Please Send Resume to:

MSI **Management Solutions, Inc.**
1416 South Third Street, Louisville, KY 40208
502-634-1387

CONTRACTORS

Min. 2 years experience:
- IDMS/ADSO
- ORACLE, SQL-FORMS
- AS/400, RPG
- IMS & CICS, TSO/ISPF
- C, VMS or UNIX
- UNIX, FORTRAN
- DB2/CSP

Long term projects, high rates. Please call, fax or mail resume to:

PAR, INC
4615 S.W. Fwy, Ste. 400
Houston, Texas 77027
(713) 622-3711
FAX (713) 622-3778
4131 N. Central Expwy, Ste. 600
Dallas, Texas 75204
(214) 443-2601
FAX (214) 443-2662
Member NACCB

D P Professionals

FIRST TO THE FUTURE

Be A CHC Consultant

In the complex and ever-changing information systems arena, the future belongs to those who can anticipate it. And it's this special vision that sets Computer Horizons Corp. apart and makes us the success we are. Because we're first to the future, you will be too!

With us, you'll optimize your technological and business application knowledge for our major multi-industry clients, harness new-wave systems productively and enjoy in-depth involvement, challenging projects and varied environments.

Currently we have exciting opportunities available in **Kansas City, MO; Atlanta, Louisville, Tampa** and **Houston** for highly qualified DP professionals with strong experience in:

- Capacity Planner
- ID Admin. Specialist
- H/W Planning Specialist
- DASDI Storage Admin.
- Teredata Admin.
- MVS Performance Tuning
- Unix/UTS Sys. Admin
- CICS DB-2
- Case Tools (IEW,IEF)
- Unix C Ingres
- IMS DB/DC
- Focus
- PL-1
- DB-2
- dbase III
- VM/CMS Rexx
- Telon
- Nomad
- VTAM Specialist
- Tandem P/A
- IMS Sys. P/A
- DB-2 Sys. P/A
- MVS Support
- Unix, C
- AS400 - Cobol
- VAX, Fortran
- Risc 6000, AIX

As the most talked about DP consulting force in the industry with 25 state-of-the-art facilities, and sales exceeding $100 million annually, we can offer outstanding salaries, exceptional benefit programs, including medical/dental coverage, life insurance, savings plan (401K), tuition reimbursement, relocation assistance and ample career growth opportunity.

For more information, please send your resume, fax or call: **Jim Bentley (404)873-4472, Fax (404)873-6734. COMPUTER HORIZONS CORP., 1401 Peachtree Street NE, Suite *425, Atlanta, GA 30309.**

COMPUTER HORIZONS CORP.®

"The Solution Experts"

An Equal Opportunity Employer M/F

*UNIX is a trademark product of Bell Labs

HEALTHCARE INFORMATION MANAGEMENT

DEC/VAX DG UNIX "C" RPGIII COBOL IBM MVS/XA

Bus. Ofc. Mgt./Implementation Clinical - Ancillary Applications/Physician Systems

Growing healthcare information management consulting firm seeks mature professionals with operational and/or technical experience. Analytical and communication skills, both oral and written, are a must. Relocation is not required. Work with emerging technologies for clients open to the re-engineering of healthcare for today's environment. Phone our recruiters (collect) for a confidential interview:

Superior Consultant

Lawrence Cater (708) 382-5970
Nancy Guyton (314) 725-1654
Corinne Wendt (313) 855-0960
Or write to us:

SUPERIOR CONSULTANT CO., INC.
31731 Northwestern Highway, Suite 250W
Farmington Hills, MI 48334
(313) 855-0960

$1,000 HIRE-ON BONUS

OMNI RESOURCES is an Information Systems Consulting firm with offices in Wisconsin and Minnesota. We started business in 1984 and are already one of the largest Wisconsin based consulting firms, with over 80 employees. In addition to providing services to many of the largest corporations in the Midwest, we are the primary vendor to the State of Wisconsin and City of Milwaukee.

We offer an excellent compensation package, including time and 1/2 for overtime, a 401(k) with a company contribution and continuing education.

We are seeking Programmer/Analysts with at least three years of experience with any of the following:

IMS (DL/1), DATACOM/DB, DB2, IDMS, ADABAS, CICS, COBOL/II, IDEAL, INGRES, SAS, TELON, FOCUS, ORACLE, SQL, dBASE IV, RPG/400, SYNON, NATURAL, TAL, SCOBOL.

$1,000 HIRE-ON BONUS If you are hired by 8-1-1991 as a result of responding to this ad. For immediate consideration, please send your resume to:

OMNI RESOURCES, INC.

STRENGTH IN TECHNOLOGY - STRENGTH IN PEOPLE

155 E. Silver Spring Drive Suite 207
Milwaukee, Wisconsin 53217
414/332-5252 800/236-5920

2850 Metro Drive Suite 321
Bloomington, Minnesota 55425
612/851-3090 800/937-4515

131 W. Wilson St. Suite M104
Madison, Wisconsin 53703
608/255-2115 800/236-2115

2670 S. Ashland Ave. Suite 201
Green Bay, Wisconsin 54304
414/499-8232 800/236-2332

Equal opportunity employer, M/F/V/H

INFORMATION ENGINEERING

$50,000 - $90,000

JDG has been retained by one of the Washington, D.C. area's most prestigious Systems Consulting firms to locate a cadre of Strategic System Planning professionals. Those to be considered will ideally have a BS/MS in C.S. or related, plus in-depth experience in:

- DATA MODELING
- STRUCTURED METHODOLOGIES
- ENTERPRISE ANALYSIS
- CASE TOOLS
- DATA ADMINISTRATION

For consideration, call (301) 340-2210 or mail/fax resume to:

JDG

JDG ASSOCIATES, LTD.
1700 Research Blvd.
Rockville, MD 20850
FAX (301) 762-3117

Nationwide Computer Career Specialists

DP or Tech experience? We have immediate opportunities if you have the right experience!

- DB ADM'S
  ALL DATABSES
- PROGR/ANALYSTS
  DB2
  IMS DB/DC
  AS/400
  COBOL/CICS
  IDMS
  ORACLE/VAX
- COMMUNICATIONS
  SNA/T-1
  NCP/VTAM
- TECH SUPPORT
  MVS SYS PROGR
  VAX CLUSTER MGR
  CICS SYS PROGR

Mail resume or call to discuss your career goals. We match you to the job you want.
All USA locales — All fees paid

HAMILTON TECHNICAL PERSONNEL, INC.
P.O. Box 369
West Hurley, N.Y. 12491
(914) 679-4050

SOFTWARE OPPORTUNITIES

713/488-7961

Let our national award winning computer specialists assist you in your search. We have over 300 affiliated offices around the country ready to work for you!

SYSTEMS SOFTWARE	$80K +
AS/400, S/38 P/A	TO $48K
LIFE INSURANCE	TO $60K
DB2 ANALYSTS	TO $60K +
IDMS, IMS OR ADABAS	TO $50K
P/A (COBOL OR ALC)	TO $40K
MVS OR VM INTERNALS	$ OPEN
ACF/VTAM/NCP	TO $50K
COBOL/CICS	TO $40K
UNIX INTERNALS	TO $60K +
UNIX/C	TO $55K
COBOL/DB2 OR IMS	TO $48K
EDP AUDITOR	$ OPEN

ROBERT SHIELDS & ASSOCIATES
P.O. Box 890723, Dept. C
Houston, TX 77289-0723
FAX: 713/486-1496

CA & AZ CONTRACTS

CONSULTANTS WANTED

P. Murphy & Associates, Inc.

4405 RIVERSIDE DR., SUITE 100
BURBANK, CA 91505
(818) 841-2002 (714) 552-0506
FAX: (818) 841-2122
Member NACCB

RESUMES

Professional Resume Services has been successfully serving the national computer industry since 1976.

- All Levels and Specialties
- Resume Preparation
- Cover Letter Development
- Career Planning

Immediate Service
Call 800-933-7598
24 hours a day.

Systems Analyst, 40 hrs/wk. 9:00am - 5:00pm, $31,100/yr. Design/development/implementation of software programs for business applications. Develop/modify code supporting 5ESS digital switching relational database system. Plan/implement test plans for feature configuration of management support systems. Tools: C, UNIX shell, INGRES, embedded SQL, QUEL, DBase, Informix, ILAS, ISDN, minicomputers. MS in Computer Science as well as one year as a Systems Analyst or as a Software Programmer required. Previous experience must include work with C/UNIX on minicomputers. Graduate coursework must include: Topics in Computer Networks; Formal Theory of Computations; Advanced Database Organization. Must have proof of legal authority to work permanently in the U.S. Send resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Joan Sykstus, Reference #V-IL-2492-S. NO CALLS, AN EMPLOYER PAID AD.

Why WTW?

Because You're The Best

Wesson, Taylor, Wells one of the nation's premiere software consulting firms – has challenging careers across the country for top programmer/analysts with application development expertise.

DEC VAX, SMARTSTAR Rdb or Oracle

Send resume immediately or call:
Wesson, Taylor, Wells
P.O. Box 3046
Valley Forge, PA
19484-3046
1-800-833-2095

WTW SOFTWARE CONSULTING SERVICES

An Equal Opportunity Employer

SOFTWARE ENGINEER - 40 hrs./wk. 8-5. $40,000.00 per yr. Design, develop and implement financial software applications systems utilizing IBM 4341, 4881 and 3090 mainframes; CICS, VSAM, CLIST, DB2 and QMF software; COBOL II, JCL languages and MVS/XA operating systems. Requires Bachelors degree in Computer Science or Statistics and 3 years experience in job offered. "Employer Paid Ad". Send resumes to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Reference NO. 36291.

Software Opportunities Nationwide!

For specialists in: C/Windows Develop, UNIX, Relational Database, AS/400.

Send resume to:

Capital Personnel
815 Office Pk Rd #8, D-AV., W. Des Moines, IA 50265
515/226-0510
FAX: 515/226-1388
Employer Paid Fees

SOFTWARE ENGINEER - 40 hrs./wk. 8-5. $37,000.00 per yr. Analyze complex systems requirements; develop, implement, convert and maintain financial, health care, government and communications application systems utilizing UNISYS A4, 1100/94, A17, A15 and V380 hardware; DMS II, DMS 1100, ECL, COMS, GEMCOS, SDF, ERGO, MARC software; COBOL, ALGOL, WFL, MAPPER, LINC languages and MCP operating system. Requires Bachelors degree in Computer Science or Electrical Engineering and 6 months experience in job offered or 6 months experience as Systems Analyst. "Employer Paid Ad". Send resumes to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Reference NO. 31491.

SENIOR SOFTWARE ENGINEER -40 hrs./wk. 8-5. $48,000.00 per yr. Analyze complex system requirements; design, develop and maintain a telecommunications technical services system utilizing TANDEM NON STOP VLX or TXP mainframes; Guardian 90-C20 operating system; PATHWAY, ENCOMPASS, SNAX software; COBOL, SCOBOL, TAL languages. Requires Bachelors Degree in Computer Science or Physics or Electronics or Electrical Engineering, 3 years experience in job offered or 3 years experience as Software Engineer/Associate Consultant. One of the 3 years experience must be with IBM 3090 mainframe and ADABAS/NATURAL software. "Employer Paid Ad." Send resumes to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Reference NO. 29491.

OPPORTUNITY

Programmer/Analysts

Outstanding career opportunities are yours when you join the team at Systems & Programming Consultants, serving an impressive list of clients across the southeastern United States. SPC provides a complete range of contract and consulting services from offices in Atlanta, Charlotte, Nashville, Orlando and Tampa. We currently have professional opportunities for programmer/analysts with a minimum of two years experience in any of the following areas:

• HOGAN • CPCS • CSP • DB2
• COBOL • CICS • IMS DB/DC

Goal-oriented individuals selected to join our team will enjoy competitive salaries and excellent benefits. If you're ready to advance your career, send or fax a resume (Attn: Robin Bagby) today, including the office location you prefer.

SPC SYSTEMS & PROGRAMMING CONSULTANTS

"Joining Forces To Reach New Heights"

212 South Tryon Street • Suite 1660 • Charlotte, NC 28281
Fax 803/831-8630

DISCOVER YOUR POTENTIAL

Outstanding opportunity to join a dynamic MIS organization ranked in top 100 by CIO Magazine. Headquartered in attractive suburb of Dallas, client is one of the nation's largest pharmaceutical wholesalers with sales of $2.8 billion.

Company is undergoing large, multi-year project to replace virtually all of its current business systems in addition to a Burroughs mainframe to IBM mainframe conversion.

SENIOR SYSTEMS MANAGER - BUYING SYSTEMS

Ten plus years in purchasing and perpetual inventory systems in multiple warehouse environment. Experience in logistics/distribution (DRP or MRP) warehouse automation, auto replenishment, multi-tier warehousing, etc.

SENIOR SYSTEMS MANAGER - ACCOUNTING SYSTEMS

Ten plus years in accounting - A/R, A/P, general ledger, fixed assets, financial reporting, chargebacks, costing (layered, NIFO, FIFO).

For both positions, experience in high volume transaction environments is important in addition to excellent managerial/people skills. Client offers highly competitive salaries and excellent benefits within a progressive, results-oriented environment.

For consideration, please send resume with salary history to:

P.O. Box 473
Dallas, TX 75221

IEF EXPERIENCE?

Claremont Consulting Group, Inc. is a strategic alliance partner of Texas Instruments. We specialize in supporting the IEF and PACBASE Integrated-CASE products. We are a rapidly growing consulting company well recognized in the IEF and PACBASE markets as a quality organization.

Claremont is looking for permanent employees to work with us at our client sites in the West-coast and Mid-West regions. The positions vary in nature from Project management on a multi-million dollar development project to Analyst/Programmer roles. All candidates must have a minimum of one year full life-cycle IEF experience. Some exposure to Business Systems Design and Construction is required for all positions. Flexibility to travel is a plus.

Claremont offers excellent compensation, a comprehensive benefits package and many opportunities for career growth.

To learn more about your potential with an exciting company specializing in the development of systems using Integrated-CASE tools, call Dawn at 1-800-366-8592 or FAX (503) 690-9211.

claremont Consulting Group, Inc.

15201 N.W. Greenbrier Parkway
Suite A-2
Beaverton, OR 97006

SAN FRANCISCO BAY AREA

Our market is expanding and our clients are hiring with these skills:

• CICS	Programmer/Analysts
• ADR/DATACOM	Programmer/Analysts
• DB2	Programmer/Analysts, DBAs
• AS-400	Programmer/Analysts
• C/UNIX	Programmers, Systems Administrators
• RDBMS	All levels of ORACLE, INGRES, INFORMIX, SYBASE

THE SEARCH FIRM, INC.
595 MARKET STREET, SUITE 1400, SAN FRANCISCO, CA 94105
(415) 777-3900 FAX 777-8632

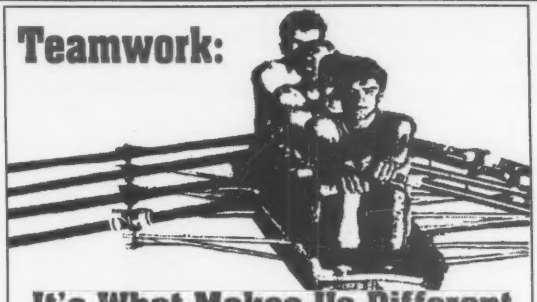
CALIFORNIA NORTH & SOUTH

VSE Internals
ESA, MVS, VM Sysprogs
SNA/VTAM Apps
MVS/VM System Developers
Key Zero Coders
VM Performance & Internals
OS/2 PM & Windows SDK

Permanent Positions Only.
Relo expenses paid by Employers.
Salaries to $100K.

XA International
14510A Big Basin Way, #240
Saratoga, CA 95070-6082
(408) 741-5579 Jim Turley
(213) 395-9517 Mike Gowa
(408) 741-0512 FAX

Teamwork:



It's What Makes Us Different And What Drives Us Forward.

At Computer People Unlimited, we believe there is strength in numbers. But true strength lies in how well a team pulls together into a single, unified effort. CPU's 250+ software consultants, who support one another, and are supported by management, are the driving force behind our consistent record of success. Consider the following opportunities:

Engineering Professionals
(Milwaukee Opportunities)

• UNIX • C • C++ • Realtime • Sun • VAX/VMS • VX WORKS • VRTX • PSOS • DSOS

Business Software Professionals
(Milwaukee, Madison, Green Bay and Appleton Opportunities)

• IMS DB/DC • SYNON • DB2 • TELON • CSP • SAS • FOCUS • Tandem • Pathway, TAL, SCOBOL • AS/400-COBOL/RPG III • PL/I • IEF

Software Engineers
(Milwaukee Opportunities)

• Batch or Continuous Process • VMS • C • RDB • DECNET • MODBUS & AB Data Highway knowledge • PACBASE • AIM or Factory Link or UNICEL

At CPU, you can expect a highly competitive salary and a superb benefits package including relocation. Candidates interested in these opportunities in our Milwaukee, Madison, Green Bay and Appleton locations, send your resume in confidence to: Bill Rudd or Julie Endlich at: (414) 225-4000 or 1-800-527-8462. Computer People Unlimited, Dept. CW-0603, 744 N. 4th Street, Milwaukee, WI 53203. An equal opportunity employer. No entry level positions available.

CPU
COMPUTER PEOPLE UNLIMITED inc.

Work In An Energy Driven Environment.

CAROLINA POWER & LIGHT COMPANY is a major force in Southeastern power generation and distribution. We offer information systems professionals a fast moving environment with the latest in proven technology.

Along with wide use of personal computers, we're operating one IBM 3090-300, one IBM 3090-200, and one Amdahl 5890-300. The CICS on-line environment has been growing at the rate of 40% per year. Recently, we have expanded to a new Data Center. We're operating under MVS/XA and VM/CMS utilizing an SNA/SDLC network consisting of over 3,000 terminals and printers. Our programming languages are COBOL, SQL and DATACOM's IDEAL. We have adopted DB2 as our standard for new application development and are aggressively expanding our use of PC-based and mainframe-based CASE tools.

We have recently completed a large strategic planning study and have a significant backlog of technical and application development projects. We are currently seeking the following:

APPLICATIONS DEVELOPMENT

PROGRAMMERS

Positions require 4+ years of structured coding experience. Highly desired experience would include COBOL, CICS, DB2 and DATACOM. A four-year degree is preferred.

SYSTEMS ANALYSTS

Positions require 4+ years experience in a development environment versus a maintenance environment. Highly desired experience would include structured design techniques, data modeling experience, prototyping and Method/1 knowledge. A four-year degree is preferred.

DATA ANALYST

Position requires 4+ years experience in data administration, database administration, or systems development. At least 1-2 years experience in logical or conceptual data modeling is also required, as well as experience with CASE tools. Excellent interpersonal and communication skills are essential, and JAD facilitation skills are highly desirable. Some task or project management experience is also desirable. A four-year degree is preferred.

LAN SUPPORT ANALYST

Requires 3-5 years of technical experience in personal computer support, including a minimum of 1-2 years in the design, implementation and support of Local Area Networks, preferably in a LAN-to-LAN or wide area connectivity environment. Banyan network operating system experience strongly desired. Candidates must possess strong verbal and written communication and client consulting skills. A four-year degree is preferred.

There are few areas in the country as attractive as the Carolinas. The landscape is famous for its rolling hills and magnificent fall colors. The capital city of Raleigh, location of our headquarters, is known for its nationally recognized university programs, sports and proximity to both beach and mountain resorts. Despite its growth, the region has maintained a moderate cost-of-living and its southern charm.

CP&L offers competitive salaries, excellent benefits, and opportunities to advance. If you're interested in becoming part of our important team of professionals, send resume with salary requirements to: **Mary Anne Lynch, Senior Recruitment Representative, Dept. CW6391, CAROLINA POWER & LIGHT COMPANY, P.O. Box 1551, Raleigh, NC 27602.** An Equal Opportunity/Affirmative Action Employer.

CP&L
Carolina Power & Light Company
Energy In Operation

TEAM/PROJECT LEADER: SYSTEMS PROGRAMMING: Lead teams of professional staff, including Systems Analysts, Senior Systems Programmers and Lead Programmers and subordinate technicians, involved in software development and computer programming projects by: (1) analyzing design needs and problems to establish design and development specifications and schedules; (2) defining scope of projects to meet limits of time, budget and packaging; (3) coding, testing and modifying software systems; (4) providing technical guidance to management, product management, technical and support staff regarding application and use of systems; and (5) training subordinates and directing/evaluating their performance. Requires B.S. in Software Engineering or Computer Science or equivalent foreign degree; or equivalent education and/or work experience as determined by a written evaluation from an independent credentials evaluation service. Requires four years systems programming and systems analysis experience including at least two years programming experience using MUMPS language and programming in VAX/VMS operating systems; Requires one year of experience designing or implementing software configuration control systems and providing technical work direction to junior systems programmers. Salary $40,000.00 per year. Submit resumes to: Job Order #1467, Commonwealth of Massachusetts, Department of Employment and Training, Special Programs, Second Floor, 19 Staniford Street, Boston, MA 02144.

Programmer Analyst, 40 hrs/wk. 9:00am - 5:00pm, $28,025/yr. Design, code, test and debug; training/marketing activity reporting system; programs in CICS and MANTIS in DOS/VSE environment using KSDS and ESDS VSAM file structures. Develop; applications to extract/summarize data from mainframe and link to PC Database; mainframe applications using on-line core dumps. Additional tools: COBOL, Easytrieve Plus, Panaudit, Assembler, Basic, C, Pascal, dBase, ICCF and Vollie Text Editor, CEDF, IDCAMS, JCL, CA-SORT, CA-RAPS, CA-DYNAM, Mantis debugging. BS in Mathematics/Computer Science as well as one year and six months experience as a Programmer Analyst or as a Systems Analyst required. Previous experience must include: COBOL, dBase, Pascal, Basic. Education or experience must include one major project in the design and implementation of microcomputer operating systems in a multiprogrammable environment. Must have proof of legal authority to work permanently in the U.S. Send resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Maxine Counts, Reference #V-IL-2593-C, NO CALLS, AN EMPLOYER PAID AD.

Data Base Administrator Systems Engineer

Entergy Services, Inc., the technical service subsidiary of Entergy Corporation, has an opening for a Data Base Administrator at its New Orleans location.

This position will work with Operations Analysts, Programmers and others in support of IMS DB/DC applications with focus on Materials applications. The DBA will also work with other Systems Engineers on system design and implementation strategies with an emphasis on data base management. This position must utilize all available resources to monitor for potential problem areas, identify and define existing problem areas, and provide insight on possible avenues for resolution. In addition, the Data Base Administrator will be responsible for developing and documenting procedures, standards, and techniques.

The current hardware environment consists of two IBM 3090/400's in an MVS/XA operating system environment supporting large IMS production applications. A minimum of 3 years experience is required, preferably with experience to include COBOL, VSAM, MVS, PL1, MFS, JCL, and Dialog Manager. DB2 and Micro Focus workbench is a plus. A Bachelor's degree or equivalent experience is needed.

We offer an excellent compensation and benefits package. For consideration, please send resume and salary requirements to: **Diana Harris, Entergy Services, Inc., P.O. Box 61000, New Orleans, LA 70161. 1-800-231-4481, in Louisiana call (504) 569-4960.**

An Equal Opportunity Employer M/F/H/V

Entergy Services
An Entergy Company

CONSULTANTS

EMAIL
PARADOX
VAX SYS.
OS2 APPC
DoD TEST
VMS X.25
UNIFACE
SYBASE
VAX/RDB
IPS
IMSDB/DC
UNIX/C++

COMSYS
Atlanta, Research Triangle, Phoenix & Washington, DC

4 Research Pl.
Dept. CW
Rockville, MD 20850
800-9COMSYS
Fax:
301-921-3670

NACCB Member

SOFTWARE CONSULTANTS

We're The Registry a dynamic, rapidly growing Software Consulting Company with unique and highly challenging assignments for both Software Engineers and MIS programmers at all levels of experience. Our expanding list of clients (many of which are in The Fortune 500) offer the opportunity for critical involvement in some of the most demanding and exciting environments within the greater Boston area and throughout the United States.

NATIONAL

- TANDEM/COBOL
- IMS/DB2/COBOL
- IDMS/ADSO/CICS
- IDEAL/DATACOM/CICS
- VAX/VMS/DECNET/X.25/C
- STRATUS/ISDN/SNA/X.25
- OS2/VIDEO DRIVERS/TEST
- MIS DIRECTOR VAX ENVIRON.

Contact: Sharon
1-800-248-9119

BOSTON

- SYBASE DEV.
- STRATUS/PL1/C
- MS-WINDOWS 3.0
- UNIX/SYS ADMIN.
- EASEL DEVELOPMENT
- VAX/INGRES-MULTIPLE
- AS/400 RPG III/COBOL
- UNIX/KERNAL/INTERNALS

Contact: Dave
(617) 237-9119

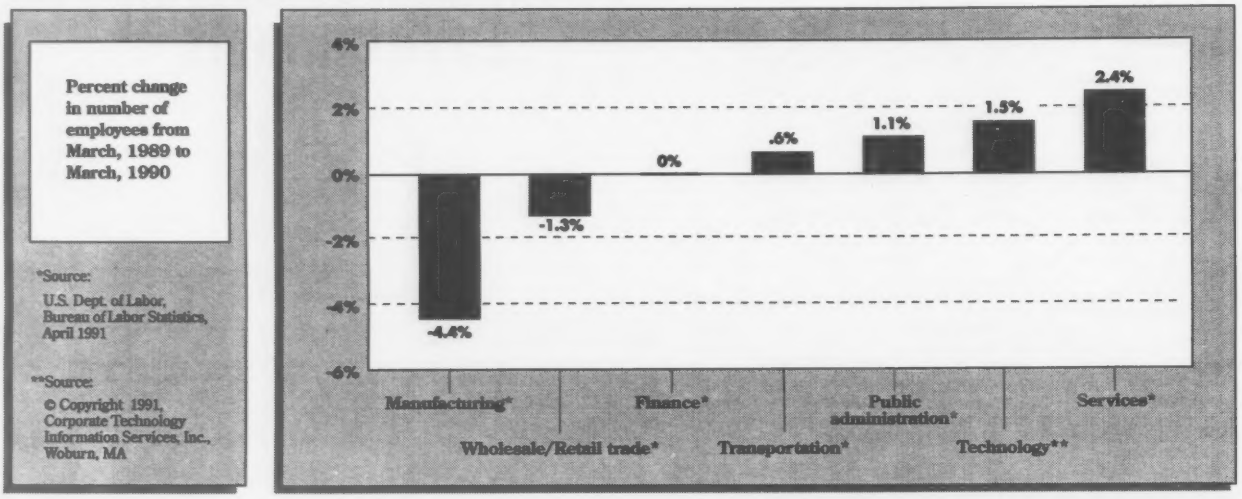
Fax: 617-237-0723

The Registry
42 Washington Street, Wellesley, MA 02181
An Affirmative Action/Equal Opportunity Employer Member NACCB

The Registry

Computerworld/CorpTech Career Index

Technology and service industries led all others in employment growth during the period from March, 1989 through March, 1990, based on a survey of 2,473 technology companies and Bureau of Labor Statistics data



TelTech

In Search of Excellence

TelTech Corporation, an internationally recognized full-service (consulting - software development - technical education services) firm, is looking for talented Data Processing professionals with experience in any of the following:

- **Walker Procurement Package (w/DB2/CICS and/or COBOL Long-term assignment, 5-6 P/As)**
- **SABRE-TALK - ACP/TPF w/PL1, (4-5 P/As)**
- **SYBASE**
- **GUPTA - SQL/SQL WINDOWS**
- **MS WINDOWS - SDK/ORACLE**
- **PROGRESS - MOTIF - PARADOX**
- **AMERICAN SOFTWARE PKG(S)**

If you have these, or any other D.P. skills, please call TelTech today. Minimum 1 year experience. We will relocate/sponsor. Send resume/salary requirements to our Corporate Headquarters, for positions throughout the United States.

TelTech Corporation

39 Broadway, 32nd Floor, New York, NY 10006
Attn: Margaret Whiting, Recruiter
(212) 514-5440 1-800-648-2372
24 hour Fax #: (212) 514-5504
Equal Opportunity Employer M/F

Central Ohio Computer & Data Processing Consultant firm seeking systems engineer to design, develop and test software for a telecommunications network system providing services to international telephone system. Duties include development of user interface, report capability, and system management tools in object oriented environment to give management accurate data concerning load routing requirements. Requires M.S. in Computer Science and expertise in database management, UNIX ⊖ operating system, C programming language, object oriented programming, computer graphics and user interface, and network systems as demonstrated by not less than six (6) quarter hours of course work or research in each area of expertise at graduate level. No exp. required in above duties but applicants will qualify with one year experience which includes development of database systems and user interfaces. Experience may be before or after degree. 40 hrs/wk, 8:00-5:00, Mon.-Fri., $38,000/yr. Must have proof of legal authority to work permanently in U.S. Send resume in duplicate (no calls) to J. Davies, JO# 1260280, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216.

Systems Analyst, 40 hrs/wk. 9:00am - 5:00pm, $33,250/yr. Design, development, implementation and testing of advanced complex software for business applications. Projects include: legislative tracking system for city government documentation management, database design and management. Tools: C, Unix. MS in Computer Science as well as one year as a Systems Analyst or as a Technical Representative required. Previous direct or indirect experience must include database management and the design/implementation of business applications software using C/UNIX. Graduate coursework must include: Operating Systems Design; Advanced Topics in Computer Algorithms. Must have proof of legal authority to work permanently in the U.S. Send resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Martha Cartagena, Reference #V-IL-2286. NO CALLS, AN EMPLOYER PAID AD.

THE JOB LINE
POSITION REPORT
Over 500+ current DP, IS, MIS positions nationwide appear in each weekly issue of POSITION REPORT, on-line or by hardcopy. Jobs are sorted by geographic region and computing environment (micro, mini and mainframe). To view our on-line sample issue dial: **(708)259-8838: 2400/8/N/1**
$42/4 weeks, $115/12 weeks. V/MC/Cwc/M.O. To order call: **(800) 962-4847**
David J. White & Associates, 809 Ridge Road, Wilmette, IL 60091

Contracts & Regular Full-time Positions in California

Contact Rene Campbell for:
- S/36 RPGII (learn Unix!)
- AS/400 Progs & Operators

Contact Ron Conway for:
- DB2 Programmer/Analysts
- DB2 Natural2/Adabase P/A
- IDMS ADS/O Prog/Analysts
- TANDEM Syst & Applications OUTSIDE OF CALIFORNIA
- DB2/CSP in N. Mexico & Seattle
- DB2 M&D in Idaho

LLOYD, RITTER & ASSOCIATES, INC.
1043 N. Shoreline Blvd. #204
Mountain View, CA 94043
(415) 964-0644
Fax: (415) 964-6719
(Minimum 3 yrs experience req.)
MEMBER NACCB

Consulting Positions are available in the western United States for Senior Data Processing Professionals with this skill:

IEF CASE TOOL

Please call or send resume to:

Systems West Computer Resources, Inc.
P.O. Box 11717
Salt Lake City, UT 84147

(801) 364-7900
FAX (801) 364-9700

IS DIRECTORS

If you need good people, we've got them. Computerworld reaches more than 629,000 computer professionals every week. That's more qualified computer pros than any newspaper can deliver. And you can select either a regional edition or national edition of Computerworld's Computer Careers section for your advertisement.

For more Recruitment information, or to place your ad regionally or nationally, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

Computerworld Weekly, Regional, National.

And it Works.

Be A Part Of The Information Engineering Elite.

Eagles International's Advanced Technology Group is a recognized world leader in Information Engineering.

Phenomenal growth has created opportunities for highly qualified:

Information Engineers
IEF Case Tool
ISP, BAA I, BAA II
BSD Technical Design
Construction, Implementation
IEW Case Tool

Write, phone, or fax Eagles International, where the rewards for performance are substantial.

EAGLES
EAGLES INTERNATIONAL
15851 Dallas Parkway, Ste. 501 Dallas, TX 75248
Phone:(214) 450-5900 Fax:(214) 450-5901
Phone: (800) 800-6785

Computerworld recruitment advertising works.

That's because more computer professionals read more recruitment ads in *Computerworld* than in any other newspaper. For more information or to place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

Weekly. Regional. National. And it works.

An IDG Communications Publication

"We can easily tie a number of new company accounts directly to our Computerworld Direct Response Card advertising."

-David Kimball
President
Telepartner International

As President of Telepartner International former Packet/PC head-quartered in Farmington, Connecticut, David Kimball is responsible for telling the entire computer industry about Synchrony, the company's new management software program for IBM 3270 and compatible PCs. He's also responsible for finding the most cost-effective way to get their sales message to a large number of people. So he runs a regular advertising schedule in *Computerworld Direct Response Cards.*

"Synchrony is specifically designed to address the nees of an emerging market. In the past few years, the trend toward more complex cooperative processing on remote PCs has made PC software files increasingly difficult to control. Synchrony's easy-to-use integrated program allows different departments within a large company to distribute, retrieve, install and and update data and applications on PCs - automatically and with reliable built-in controls for true change management.

"Since Synchrony is intended for companies needing to disseminate information in vast numbers of people within dozens of different departments, our primary audience is the Fortune 1000. Telepartner International must target the senior managers who are responsible for business applications on hundreds of PCs. With *Computerworld* being The Wall Street Journal of the computer profession, *Computerworld Direct Response Cards* give us the greatest reach to regular readers in the entire computing arena.

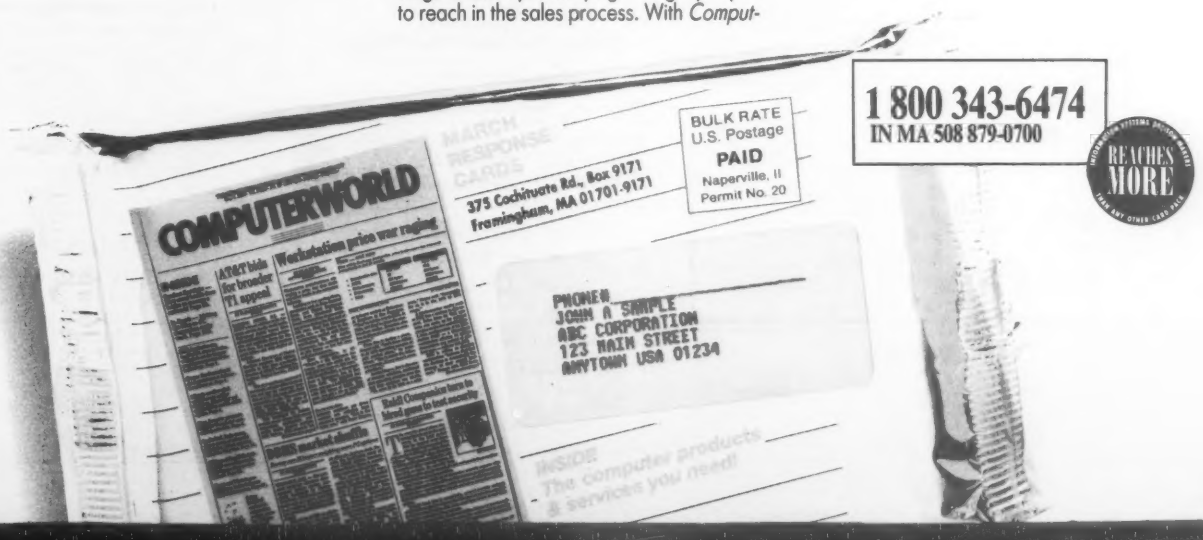
"That's particularly important to us, as, with any emerging market, Telepartner International is faced with the classic challenge of clearly identifying the right people to reach in the sales process. With *Computerworld's Direct Response Cards*, we reach a readership that's representative of people in all categories related to computer business.

"And we're more than pleased with our results. Compared to all the others, *Computerworld's Direct Response Cards* are at least twice as effective. We consistently receive as many as 300 leads with each card we run. And over a year's time, we can easily tie a number of new company accounts directly to our *Computerworld Direct Response Card* advertising.

"The truth is... we're virtually struggling to keep up with our current response load. Month after month, quality leads and sales success show us that *Computerworld Direct Response Cards* are the most effective way to reach more of our potential audience - faster and easier."

Computerworld Direct Response Cards give you a cost-effective way to reach *Computerworld's* powerful buying audience of over 135,000 computer professionals. Every month. They're working for Telepartner International - and they can work for you. Call Norma Tamburrino, National Account Manager, Computerworld Direct Response Cards, at (201) 587-0900 to reserve your space today.

COMPUTERWORLD
DIRECT RESPONSE CARDS
Where you get direct access to quality sales leads.



MARKETPLACE

Time-sharing is alive and well

BY TONY BAER
SPECIAL TO CW

Talk to some information systems executives about time-sharing, and they'll have you believe that it has fallen to outsourcing. But the rumors of time-sharing's death are greatly exaggerated.

The distinction between time-sharing and outsourcing depends on whether a firm ever had a data center, according to Robert Desautels, a senior software analyst at International Data Corp. "With outsourcing, you're getting rid of a burden, whereas with time-sharing, you're buying a service that you never had," he says.

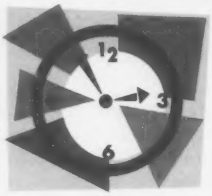
There are many definitions of time-sharing and outsourcing floating around the industry. But if time-sharing is defined as a user buying a computer service that it did not previously have, and if it involves sharing a vendor's remote computing facility with other customers, then the field is very much alive.

This type of resource sharing has been prominent since the 1960s and 1970s, when mainframe computing cost too much for most companies. The difference is that while time-sharing was the way most people obtained computer services in the past, only a small portion of companies use the option today.

The time-sharing field has seen a lot of turnover in recent years. Now, it is dominated by regional time-sharing (or remote computing) vendors, but it also includes corporations renting out the use of excess capability residing in their own data centers.

IS professionals say they use time-sharing for the following reasons:

- To access computing power that an IS operation might not be able to afford otherwise.
- To ease a company's transition during an upgrade or while building a data center from scratch.
- To assist an information center that can't keep up with its company's growth.
- To help control cash-flow problems.



Saving money

Helping an IS operation afford computing power is probably the most popular reason that companies choose to time-share.

For example, Referential Technologies, a 2-year-old, sole proprietorship, $1.2 million MVS programming tools developer in the Washington, D.C., area, has found it far more economical to pay $30,000 per year for CPU time on an IBM 3090 than to buy its own machine.

The only frustration, says Mike Shaw, president of Referential Technologies, is that the firm has to take what the time-sharing vendor offers. Shaw would like to see his vendor, Financial Technologies, a commercial spin-off of the Pentagon Credit Union's data center, update to IBM's MVS/ESA so he can update his product.

Another common reason for sharing the use of an outside computing facility is to help a company faced with major upgrades, either because the existing facilities are becoming obsolete or because the company was reorganized, sold or leveraged. Through time-sharing, the company's IS operations can run without interruption.

A little more than one year ago, H. P. Hood, Inc. in Boston faced a migration. With its IBM 4381 running out of gas [CW, April 16, 1990], Hood bought time on its parent company's machine, which was also being commercially marketed to other firms in the Northeast. The arrangement was strictly temporary, part of a three-year migration plan to divisional Application System/400s, says IS director Girard P. Hood.

By time-sharing rather than patching the old system during the transition, Hood was able to save an estimated 15% to 20% annually.

Longtime time-sharing

Sometimes temporary time-sharing arrangements work so well that they become permanent. For example, Sanwa Business Credit Corp. in Chicago needed to obtain mainframe capabilities quickly after the firm was sold by Continental Bank to Japan's Sanwa Bank Ltd. six years ago. The newly spun-off $500 million firm began time-sharing with May & Speh, a vendor with more than 30 years' experience in the field.

That arrangement remains in place today, with lease tracking performed on May & Speh's facilities and individual applications such as spreadsheets handled on networked personal computers.

According to Paul Rohde, vice president of information services, the company's 31% compound annual growth (to $2.6 billion today) required it to plow its precious IS resources into applications, not data center development. "It wasn't worth it to keep upgrading a mainframe every six months," he says.

Time-sharing can also be useful to small firms whose information centers can't keep up with the business's growth, Desautels says.

However, the business can't be too small, says New York-based independent consultant Michael Corbett, who recently wrote an outsourcing market study for Frost & Sullivan. Time-sharing is most attractive to those whose IS budgets range from $25 million to $100 million, Corbett says. Otherwise, your IS operation is either too small to realize any real savings or large enough to attain the economies of scale promised by time-sharing vendors, he adds.

Time-sharing may also be attractive to businesses with cash-flow problems, according to Donald Seiden, whose New Jersey-based firm, Computer Reserves, acts as a middleman, brokering excess CPUs from data centers across the country. For instance, a company that is now paying off high debt as a result of a 1980s leveraged buyout is not likely to be able to afford a new $800,000 data center.

Baer is president of Business and Technology Communications in New York.

Time/Services

The Genix Group

At The Genix Group, we provide mainframe computer outsourcing solutions to major international clients. With computer facilities that are among the finest in the country, your data is secure, yet readily available to you. Our high-quality, cost-effective services include:

- Computer operations 7 days a week, 24 hours a day
- Network Management
- Electronic Printing

State-of-the-art IBM compatibility:
MVS-ESA * VM/XA * TSO/E * ROSCOE * CICS * IMS * IDMS/R * DB2 * QMF * PROFS

Programmer productivity aids:
FILE-AID * CICS PLAYBACK * dBUG-AID * ABEND-AID * CICS ABEND-AID

(Preceding products are registered trademarks of Compuware Corporation.)

For more information, please call:
1-800-521-0444

The Genix Group
5225 Auto Club Drive
Dearborn, Michigan 48126

QUALITY COMPUTING SERVICES

PROCESSING & SYSTEMS OPERATIONS
OUTSOURCING
FACILITIES MANAGEMENT
REMOTE COMPUTING / TIMESHARE

SYSTEMS PLANNING & CONSULTING
STRATEGIC SYSTEMS PLANNING
NEEDS FEASIBILITY / ANALYSIS
QUALITY ASSURANCE

PROJECT MANAGEMENT & SUPPORT
PROJECT LEAD / CONSULTANT SUPPORT
SYSTEMS DEVELOPMENT
SYSTEM / DATA CONVERSIONS

For more information contact Susan Boush at: (206) 924-2527 or (800) 654-9347

Weyerhaeuser Information Systems

Mind Your Own Business...

And We'll Handle Your Data Processing

- IBM 3090 Computers with MVS/ESA and VM/XA Technology
- Extensive Nationwide Telcom Network
- Extensive Library of Third Party Software

Control your costs and gain flexibility to grow or downsize. Let SunGard Computer Services handle your data processing needs. We've been doing "outsourcing" for over 15 years. For more information, call toll-free 800-441-4203, in PA 215-387-3890, in NY 212-943-9540.

SUNGARD®
COMPUTER SERVICES INC.

Guaranteed Service Reliability
Outsourcing • Remote Computing
Timesharing Options • Full MVS/ESA Servicing
CICS • ISPF • TSO/E • VSAM • VTAM
24 Hour / 7 Day Support • Disaster Recovery Services
Program Development & Trouble-Shooting

FIT
Call 515-224-8286
FINANCIAL INFORMATION TRUST

Providing Cost-Effective Solutions for Over 20 Years

MVS/ESA • DB2 • ADABAS • SAS • TSO • CICS • LIBRARIAN

icotech

Outsourcing & Computing Services

- Uninterrupted Service
- On-line/Batch/RJE
- MICR, Laser & Impact Printing
- Media Conversion

908 • 685 • 3400

Committed to Excellence in Quality Service and Customer Satisfaction

COMPUTERWORLD
CLASSIFIED MARKETPLACE
Examines the issues while computer professionals examine your message. Call for all the details.
(800) 343-6474
(In MA., 508/879-0700)

Time/Services

Hot-Cold Site

We will sublease our IBM 4300 hot site and/or our relocatable cold site at a very attractive rate for either a short or long term agreement. For additional information contact:

Sterling Inc.
Mary Miller
(216) 668-5789

Go Shopping in... Computerworld's CLASSIFIED MARKETPLACE
Call for all the details
(800) 343-6474
(In MA., (508) 879-0700)

REMOTE COMPUTING

- We locate COMPUTER TIMESHARING, including OUTSOURCING on ALL mainframes.
- Since 1968 we have found your LOWEST prices from over 800 nationwide data centers.
- NEVER a charge to the Buyer, because our fee is paid by the Seller.

CALL DON SEIDEN AT
COMPUTER RESERVES, INC.
(201) 882-9700

Advertise Your Products In The *Classified Marketplace*

Featuring

- ☐ Hardware
- ☐ Software
- ☐ PC Products
- ☐ Conversions
- ☐ Time/Services
- ☐ Buy/Sell/Lease
- ☐ Communications
- ☐ Peripherals/Supplies
- ☐ Business Opportunities
- ☐ PC Rentals
- ☐ Bids/Proposals/Real Estate
- ☐ Graphics/Desktop Publishing

Reach over 612,000 information systems professionals by placing your company's message in ***Classified Marketplace.***

Name: _____
Title: _____
Company: _____
Address: _____
City: _____
State: _____ Zip: _____
Telephone: _____
Ad Size:
_____ columns wide x _____ inches deep.
☐ I am enclosing ad material with this form.

Return this form and advertising material to:

Computerworld
Classified Marketplace
375 Cochituate Road, Box 9171
Framingham, MA 01701-9171

(800) 343-6474
(In MA., (508) 879-0700)

COMPUTERWORLD
Where all computer buyers and sellers go to market.

EVERY VENDOR ON THIS PAGE HAS A WELL-EQUIPPED DATA CENTER

We all have large systems plenty of MIPS, and UPS systems

We will all provide you with the software you need

ONLY ONE WILL EXCEED YOUR EXPECTATIONS

Only one runs your work as their own

Only one minimizes your risk and maximizes your cash flow

Only one will get the job done-totally

YOU'RE IN CONTROL WHEN YOU PUT US IN CONTROL

COMPUSOURCE
....outsourcing services for over a decade
(919) 481-2962

DATA ENTRY PROBLEMS? WHO SHOULD YOU CALL?

Who understands the problems converting your Data Entry department? Who has proven experience with Fortune 500 companies?

Who will solve your *Data Entry problems?*

ADE of Wisconsin, Inc.

- Outsourcing specialists
- Will hire your people
- Data conversion
- 16 years experience
- Preferred customer service
- Telecommunications

CALL: 414 351-5700

REMOTE COMPUTING • OUTSOURCING

- MVS/ESA
- MVS/XA
- DB2
- CICS
- TSO
- IMS/DBDC
- VM/370
- CMS
- DOS/VSE

OVER 150 SOFTWARE PRODUCTS

- DEVELOPMENT
- PRODUCTIVITY
- DEBUGGING
- PERFORMANCE

- TELENET
- SEARSNET
- TYMNET
- IBM INFORMATION NETWORK

EXTRAORDINARY CUSTOMER SERVICE
MIGRATION MANAGEMENT

GIS INFORMATION SYSTEMS, INC
815 Commerce Drive, Oak Brook, IL 60521
708-574-3636
New England 617-595-8000

OUTSOURCING AND REMOTE COMPUTING

- IBM MVS/XA Environment
- DB2, IDMS/R, Model 204 and 4GLs
- Professional Support Staff
- Experienced Migration Management Team
- Simplified Pricing and Invoicing
- AS/400
- Full Supporting Services
  - Media Conversion
  - Laser & Impact Print Facility
  - Application Programming
- Technical Support
- 24 Hours a Day – 7 Days a Week

May & Speh, inc.
1501 Opus Place, Downers Grove, IL 60515-5712
1(800) 729-1501
For More Information Contact: Tony Ranieri

COST-EFFECTIVE COMPUTING SERVICES for TODAY and.... TOMORROW

COMDISCO COMPUTING SERVICES CORP.

Provides you with:

REMOTE COMPUTING
COMPUTER OUTSOURCING
FACILITY MANAGEMENT

Featuring:

- IBM® CPUs and Peripherals
- Systems Software: MVS/ESA, MVS/XA, TSO/E, ISPF/PDF, CICS, VM/XA, VM/SP, DOS/VSE, HPO, CMS
- Application Software: Database Management, Application Development, 4/GLs, Graphics, Statistical Analysis
- Multiple Communications Methods
- Technical/Operations/ Production Support
- Automated Tape Handling
- ULTRA-Secure Data Center
- Advanced Laser Printing
- Disaster Recovery Services

Call: Robert Marino
201-896-3011
COMDISCO

COMDISCO COMPUTING SERVICES CORP.
430 Gotham Parkway, Carlstadt, NJ 07072

Financial Technologies

Innovative, Responsive, Quality

a few words that describe the most complete computer processor offering.....

IBM 3090, MVS/XA, MSA, DB2, VM/HPO, TSO, CICS/VSAM and a multitude of third party software

the complete source for ... outsourcing ...

1-800-443-8797

14300 Sullyfield Circle
Chantilly, Virginia 22021

STAT-TAB

OUTSOURCING
TIMESHARING
FEATURING...

- IBM mainframes & peripherals
- UPS: battery, dual-turbine generator back-up
- Automated print distribution
- 24-hour, 7-day processing
- Full technical support
- Network specialists
- Migration support
- Laser printing: sheet & continuous form

OPERATING ENVIRONMENTS
MVS/XA CICS VM/XA
TSO/E DB2 CMS
ISPF/PDF IMS/DB/DC
VM-MAGIC VPS
FOCUS DOS/VSE

PRODUCTIVITY/ DEVELOPMENT AIDS
SAS EASYTRIEVE PLUS
FILEAID ABENDAID
SPREADSHEET GDDM
IAM COMPAREX
XCOM 6.2 E-MAIL
ACCTG. PKGS. XICS

COMMUNICATIONS/ NETWORKING
IBM INFORMATION NETWORK
TOKEN RING NJE
T1 SUPPORT TYMNET
PROTOCOL CONVERSIONS
PC-HOST SUPPORT
...and much, much more

CALL JOE BALSAMO
(708) 449-DATA

STAT-TAB
a division of CREATIVE AUTOMATION COMPANY
229 Fenci Lane
Hillside, IL 60162
Serving the Nation Since 1936

CLASSIFIED

Software

KeyEntry III
PC-BASED DATA INPUT SOFTWARE
REPLACE DEDICATED DATA ENTRY SYSTEMS
FRONT-END MAINFRAME APPLICATIONS

- LAN or stand-alone environments
- Two-pass verification
- Batch balancing and check digits
- Operator statistics reporting
- Embedded-numeric keypad emulation
- Extensive field edits and table lookups
- Screen Painter and MenuManager included
- Batch Control System and Reformat utility
- User-definable help screens and windows
- OS/2 version
- Outstanding customer support
- Thousands of users worldwide
- French, Spanish, and German versions
- Consulting, conversion and integration services

800-533-6879

FREE DEMO DISK AVAILABLE!

SOUTHERN COMPUTER SYSTEMS, INC.
Phone (985) 281-3905 ■ FAX (985) 522-4651
In Europe: SCS Europe, Ltd. 0753-36570 ■ FAX 0753-34765

HELP!
HELP DESK SOFTWARE

HELP EXPRESS is a LAN based preemptive support tool. Unique *SpeedSearch™* allows less technical personnel to solve 85% of initial calls through past problem look-up and on-line procedures. HELP EXPRESS allows multiple support people to respond while tracking a request. Ad-hoc/standard reports identify problem areas/equipment/software combinations or needed training. Hot key to DOS or terminal emulation.

SOFTWARE MARKETING GROUP, INC.
CALL TOLL FREE:
(800)395-0209
FAX:(515)243-8816
Evaluation System Available!

It's the *Classified Marketplace*

Reach Computer Professionals Where They Shop For:

- ☐ Buy/Sell/Lease
- ☐ Conversions
- ☐ PC Rentals
- ☐ Hardware
- ☐ Software
- ☐ Peripherals/Supplies
- ☐ Communications
- ☐ Graphics/Desktop Publishing
- ☐ Time/Services
- ☐ Bids/Proposals/Real Estate
- ☐ Business Opportunity

(800) 343-6474
(in MA., 508/879-0700)

Conversions

CONVERSION SPECIALISTS

AUTOMATED CONVERSIONS TAILORED TO YOUR NEEDS

DOS TO MVS
PLATFORM TO PLATFORM
HONEYWELL TO IBM
WANG TO IBM
MACRO TO COMMAND
RPG TO COBOL
PL1 TO COBOL
MOST LANGUAGE/ CONVERSIONS

BELCASTRO COMPUTER SERVICES, INC.
831 VIENNA AVE.
NILES, OH 44446
(800) 521-2861

COMPUTERWORLD
CLASSIFIED MARKETPLACE

Examines the issues while computer professionals examine your message.

Call for all the details.

(800) 343-6474
(In MA., 508/879-0700)

Bids/Proposals/Real Estate

MS CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by CDPA, 301 N. Lamar St., 301 Bldg., Suite 508, Jackson, MS 39201 for the following:

RFP 2012, due Tues, 7/9/91 at 3:30 p.m. for application software & a relational DBMS to support both the Administrative & Academic Information System needs of MS STATE UNIVERSITY in the areas of: Finance & Accounting, Student Records, & Human Resources.

RFP 2022, due Mon, 6/17/91 at 3:30 p.m. for seven 80386-based CAD workstations, a printer, plotter, digitizers, & software for HOLMES COMMUNITY COLLEGE.

RFP 2023, due Thurs, 6/20/91 at 3:30 p.m. for the sale of UNISYS 1100/74 & UNISYS 1100/72 mainframes & peripherals for MS STATE UNIVERSITY.

Detailed specs may be obtained from the CDPA office. CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

Patsy Stanley @ (601) 359-2604

The Computer and Data Communications Services Agency (CDCSA) of the City of New York, is soliciting proposals for the purchase, installation and maintenance of an Automated Tape Library (ATL) system and a local area network. To obtain a proposal, please contact Mr. Jeff Burns at (212) 240-4318. A pre-proposers conference is scheduled for June 12, 1991 at 11:00 A.M. in the 11th floor conference room at 111 Eighth Avenue, New York, N.Y. 10011. Proposals are due on July 10, 1991 and should be sent to CDCSA, 253 Broadway, 9th Floor, New York, N.Y. 10007, Attn: Jeff Burns.

629,000 IS/DP Professionals see the *CLASSIFIED MARKETPLACE each week.*
Call for advertising information:
(800) 343-6474
(In MA., 508-879-0700)

Peripherals/Supplies

9-Track Tape For Your IBM PC/XT/AT/PS-2™

Read 1600 or 6250 bpi 9-track tapes from a micro, mini or mainframe in EBCDIC or ASCII as mirror image or by individual files.
Use the 2000 PC™ for disk backup, data interchange or archival storage.
PC/XT/AT/PS-2 are trademarks of IBM.

DIGI-DATA CORPORATION
8560 Dorsey Run Road
Jessup, MD 20794-9990
(800) 782-6395
FAX (301) 498-0771

COMPUTERWORLD
Classified Marketplace
delivers your message in companies that plan to buy your product or service.

From PCs to minis, mainframes to supercomputers, Computerworld's readers buy products across all ranges of today's computers. So if you're selling, advertise in the newspaper that delivers readers that plan to buy YOUR product or service. Advertise in Computerworld's Classified Marketplace!

For more information, call:
(800) 343-6474
(in MA, 508/879-0700)

Your used computer equipment deserves a second chance.

If you have used computer equipment to sell, *Computerworld's* Classified Marketplace is the best place to do your selling. That's because the Classified Marketplace features a Buy/Sell/Lease section to help you market your equipment to the very people who are looking to buy.

And when you advertise in *Computerworld* Classified Marketplace, you reach a total (ABC-audited) audience of over 629,000 computer professionals who turn to *Computerworld* for news, information, features - and the Classified Marketplace - every week.

So give your used computer equipment a second chance today. To reserve your space, call:

800/343-6474
(in MA, 508/879-0700)

COMPUTERWORLD
Where all computer buyers and sellers go to market.

Buy/Sell/Lease

IBM SPECIALISTS
AS/400 · SYS/3X
BUY · SELL · TRADE · LEASE
UPGRADES · FEATURES · PERIPHERALS
NEW AND USED
IBM MAINTENANCE GUARANTEED
ON STAFF TECHNICIANS
IBM COMPATIBLES:
PRINTERS · CONTROLLERS · MEMORY
DISK DRIVES · WORKSTATIONS · BEST UPS

CMA COMPUTER MARKETING of America, Inc.
800-251-2670
610 BRYAN ST. • P.O. BOX 71 • OLD HICKORY, TN 37138
IN TN (615) 847-4031 • FAX (615) 847-5739

EDX to AIX MIGRATION
Series/1 to RS/6000 Migration Services
SERIES/1
RS/6000
SYS 36/38
AS/400
9370
4300
RT
Buy - Sell - Lease
612-942-9830
DATATREND INC.
10250 Valley View Road, Suite 140
Eden Prairie, Minnesota 55344

BUY ■ SELL ■ LEASE ■ NEW ■ USED PERIPHERALS ■ SYSTEMS ■ UPGRADES

digital
Data General
sun
apollo
IBM

6000/8000 Series Mem ..... all sizes	
6410 Sys...W/Lic	8650 Sys...W/Lic
Micro VAX II / III ..... Built to spec	
Apollo DN2500 Sys New Loaded 6K	
Data General Aviion Sys NEW 25% off	
VT220 used $225	Maxtor 2190 Refurb $850
VT320 new $420	TK50-AA $850
VT420 new $495	DSRVB-AA $1,800

TEL.: (617) 585-8688 . FAX: (617) 585-9177
163 MAIN ST. . KINGSTON, MA 02364

WE BUY
- Data General
- Sun
- Data Products
- CDC
- PC Equipment

Associates inc
(617) 982-9664
FAX
(617) 871-4456

IBM BUY SELL LEASE

Don't Sweat It!
That's because Dana offers the full range of new and used IBM midrange systems and peripherals, as well as third-party peripherals.
So call Dana today, and relax while we save you time and money– no sweat!
Dana
Serving midrange systems users worldwide since 1979

California	800.433.4148	213.830.9009
Connecticut	800.634.5516	203.359.8040
Ohio	800.255.7560	614.899.0204
Arizona	800.433.4148	602.266.0645

New/Reconditioned
digital
Equipment

Whatever your requirements are for Digital Equipment, call CSI *first!* Buying, selling, trading, leasing, consignments - we do it all!

CSI sells all equipment with a 30 day unconditional guarantee on parts and labor and is ***eligible for DEC maintenance.***

Offering systems, disk drives, tape drives, printers, terminals, memory, options, boards, upgrades and many more.

CSI Computer Systems, Inc.
83 Eastman St.
Easton, MA 02334
Call Toll-Free
1-800-635-5435
In Mass. (508) 230-3700
FAX (508) 230-8250

CALL 1-800 345-9370
9370
IN-HOUSE TECHNICIANS
Buy Sell Lease
ssi
simon systems inc.

The BoCoEx index on used computers

Closing prices report for the week ending May 24, 1991

	Closing price	Ask	Bid
IBM PC Model 176	$200	$450	$200
XT Model 089	$450	$450	$400
AT Model 099	$575	$675	$500
AT Model 239	$625	$725	$600
AT Model 339	$750	$1,000	$700
PS/2 Model 30-286	$1,050	$1,300	$1,000
PS/2 Model 60	$1,300	$1,700	$1,300
PS/2 Model 70P	$3,000	$3,500	$3,000
Compaq Portable II	$750	$1,050	$700
Portable 286	$1,100	$1,350	$1,000
SLT 286	$1,900	$2,200	$1,700
Portable 386	$2,000	$2,100	$1,500
LTE 286	$1,950	$2,200	$1,800
Deskpro 286	$800	$1,000	$700
Deskpro 386/20	$2,150	$3,000	$2,000
Apple Macintosh Plus	$750	$975	$700
SE	$1,125	$1,250	$1,100
II	$2,600	$2,800	$2,400
IICX	$3,300	$3,600	$3,200
IIFX	$5,500	$6,000	$5,000

INFORMATION PROVIDED BY THE BOSTON COMPUTER EXCHANGE CORP.

Buy/Sell/Lease

DEMPSEY.
WHERE IBM QUALITY IS SECOND NATURE.

- SERIES/1
- 9370
- 4381
- AS/400
- SYSTEM 36/38
- POINT OF SALE

BUY—LEASE—SELL
- Processors
- Peripherals
- Upgrades

For pretested equipment, flexible financing, configuration planning, technical support and overnight shipping call
(800) 888-2000.

Dempsey BUSINESS SYSTEMS
Where IBM Quality Is Second Nature.
18377 Beach Blvd., Suite 323 • Huntington Beach, CA 92648 • (714) 847-8486 • FAX: (714) 847-3149
CDLA Computer Dealers & Lessors Association

IBM
BUY • SELL • LEASE
4381 • 3725/3745 • 3380 • 3480
- All peripherals
- Feature Work
- IBM MAQ
- Upgrades

Salem Computer Group
(800) 727-5099 CDLA Fax (919) 777-3400

IBM AS/400
Automated Backup
SIMPLE • INTEGRATED • UNATTENDED
Integrated AS/400 media management backup and restore with Magna's OZONE:
Menu-driven software in simple English (no extensive CL knowledge needed)
Unattended, automatic backup
On-line data-base tracks what, when and where to restore
Full media management and tracking
CALL FOR FREE 14-DAY DEMO
FOR QUALIFIED CUSTOMERS
Magna's OZONE Backup Software from:
wpb
Authorized Magna Dealer 1-800-223-9264

AS/400
9370
CPU'S ■ FEATURES
UPGRADES ■ PARTS
BUY ■ SELL ■ LEASE
1-800-553-0592
in MN 612-931-9000 FAX 612-931-0930
WORLD DATA PRODUCTS
CDLA Member Computer Dealers & Lessors Association
12800 Whitewater Drive, Ste. 130, Minnetonka, MN 55343

VAX RENTALS
VAX 4000 SERIES
VAX 6000 SERIES
VAX 8000 SERIES
Systems & Peripherals
• Fast Turnaround • Dependable Products
• Upgrade/Add-On Flexibility
• 6 Months • 12 Months • 24 Months
BROOKVALE ASSOCIATES
CDLA Member Computer Dealers & Lessors Association
ADAPSO Data Processing Management Association
EAST COAST (914) 474-7777 WEST COAST (408) 244-8616

9370's
Most Machines, Upgrades, Peripherals & Features in Stock
Now Supplying ES/9000-9221's
Call us for a quote
708-215-9370 Fax: 708-215-9992
Executive Infosource
1548 Barclay Blvd.
Buffalo Grove, IL 60089
9221's

SPECTRA
EQUIPMENT CORPORATION
(714) 970-7000 (800) 745-1233 (714) 970-7095 FAX

	BUY	SELL	RENT	LEASE
	IBM	digital		XEROX
ANAHEIM CORPORATE CENTER 5101 E. La Palma Ave. Suite 206 Anaheim California 92807	9370, 4381	MicroVax		3700
	AS400, S/36,S/38	VAX 6000		4045
	Point of Sale	VAX 8000		4050
	CAD/CAM	PROCESSORS		4090
	Series/1	PERIPHERALS		8790
	Banking	UPGRADES		9790

LOS ANGELES SAN JOSE SEATTLE
Integrity . . . the Spectra difference!
A full line IBM, Digital and Xerox dealer

Prime
Experienced Systems
New & Used Peripherals
Worldwide Service
Buy - Sell - Lease
OTW, Inc
305 Union St
Franklin MA 02038
508-520-0250

BUYING SELLING
DEC - SUN
Data General
Plus
All Peripherals
CALL DCS
617-837-7255
301-750-7200
DIGITAL COMPUTER CONSULTING, INC.

HP HP HP HP
NEW and USED
1000 • 3000 • 9000
Including Spectrum
BUY • SELL • TRADE • RENT • LEASE
Processors • Peripherals • Systems
All in Stock - Immediate Delivery
All warranted to qualify for manufacturer's maintenance
ConAm Corporation
It's Performance That Counts!
800/926-6264 213/419-2200
FAX 213/419-2275

HONEYWELL
LEVEL 6 DPS 6
BCS
Boudreau Computer Services
- Complete Minicomputer Line -- New & Used
- Upgrades and Features
- Depot Repair Capability
- Immediate Delivery Low Prices

(508) 393-6839
FAX 508-393-3781
BULL

It's the *Classified Marketplace*
Reach Computer Professionals Where They Shop For:
- ☐ Buy/Sell/Lease
- ☐ Conversions
- ☐ PC Rentals
- ☐ Hardware
- ☐ Software
- ☐ Peripherals/Supplies
- ☐ Communications
- ☐ Graphics/Desktop Publishing
- ☐ Time/Services
- ☐ Bids/Proposals/ Real Estate
- ☐ Business Opportunity

(800) 343-6474
(in MA., 508/879-0700)

REFURBISHED USED
- UPS SYSTEMS
- POWER CONDITIONERS
- STANDBY GEN SETS
- COMPUTER ROOM A C
- ACCESS FLOORING
- HALON SYSTEMS

Computer Site Technologies, Inc.
1-800-226-0784

CLASSIFIED MARKETPLACE
Where Computer Professionals Shop
(800) 343-6474
(in MA; 508/879-0700)

R/S 6000
Now Shipping
1.0 GB 5.25 Disk Drive
Includes
Internal Housing, Fan, Power Supply and Cable.
UNIDATA WORKSTATION SOLUTIONS WORLDWIDE
ONLY **$3,595.00**
(916) 362-1239 • FAX (916) 362-2419
Models 520, 530, 540

WE
Buy - Sell - Lease
New and Used IBM Equipment
AS400 - System 36, 38, 43XX
SHORT TERM RENTALS
Call 800-238-6405
IN TN 901-372-2622
ASCI AMERICAN SOCIETY OF COMPUTER DEALERS
COMPUTER BROKERS, INC.
2978 Shelby St., Memphis, TN 38134
"Since 1974"

SALES OFFICES

Publisher/Gary Beach

Senior Vice-President/National Sales Director/Kevin Harold, COMPUTERWORLD, 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 **(508) 879-0700**

BOSTON: Regional Vice-President - North/David Peterson, Sr. District Managers/Bill Cadigan, Sherry Driscoll, District Manager/John Wentz, Sales Assistants/Alice Longley, Lisa Bonaccorso, Linda Clinton, **COMPUTERWORLD,** 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 **(508) 879-0700**

CHICAGO: Regional Vice-President - Midwest/Kevin McPherson, Senior District Manager/Larry Craven, Sales Assistants/Kathy Sullivant, Karol Lange, **COMPUTERWORLD,** 10400 West Higgins Road, Suite 300, Rosemont, IL 60018 (708) 827-4433

NEW YORK: Regional Vice-President - East/Bernie Hockswender, Senior District Manager/Fred LoSapio, District Manager/Paula D'Amico, Sales Assistants/Susan Kusnic, Patricia DeBiase, **COMPUTERWORLD,** Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

LOS ANGELES: Western Regional Director/Betsy Burroughs, Southwestern Regional Manager/Fran Cowen, Sales Assistant/Bev Raus, **COMPUTERWORLD,** 18008 Sky Park Circle, Suite 145, Irvine, CA 92714 (714) 261-1230

SAN FRANCISCO: Regional Vice-President - West/Michela O'Connor Abrams, Senior District Manager/Emie Chamberlain, District Managers/Michele Gerus, Kaye Sharbrough, Western Regional Director/Betsy Burroughs, District Manager/John J. Flood, Sales Assistants/Nurit Zakman, Chris Kobayashi, Carol Lacasse, Lisa Cremarosa **COMPUTERWORLD,** 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555

ATLANTA: Regional Vice-President - East/Bernie Hockswender, Sales Assistant/Debra Brown, **COMPUTERWORLD,** 1400 Lake Hearn Drive, Suite 330, Atlanta, GA 30319 (404) 394-0758

DALLAS: Regional Vice-President - Midwest/Kevin McPherson, Southeastern District Manager/Darren Ford, Sales Assistant/Brenda Shipman, **COMPUTERWORLD,** 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (214) 233-6562

WASHINGTON, D.C.: Regional Vice-President - East/Bernie Hockswender, District Manager/Paula D'Amico, **COMPUTERWORLD,** Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 967-1350

CLASSIFIED ADVERTISING SALES: Vice President/Classified Advertising/John Corrigan, Marketing Director/Derek E. Hulitzky, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474, In MA **(508) 879-0700**

PRODUCT CLASSIFIED ADVERTISING:
East: Account Manager/Paul Bonarrigo, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474, In MA **(508) 879-0700**

West: Account Executive/Bill Creonte, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474, In MA **(508) 879-0700**

RECRUITMENT ADVERTISING SALES OFFICES:
New England: Regional Manager/Nancy Percival, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474, In MA (508) 879-0700, Account Executive/Karen Lesko, (800) 343-6474, In MA **(508) 879-0700**

Mid-Atlantic: Regional Manager/Valerie Gaibo, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 967-1350, Account Executive/Caryn Diott, (800) 343-6474

South-Atlantic: Regional Manager/Katie Kress, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sr. Account Executive/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, O'Hare Corp. Twr 1, 10400 W. Higgins Rd., Ste. 300, Rosemont, IL 60018 (708) 827-4433, Account Executive/Ellen Casey (800) 343-6474

West: Regional Manager/Barbara Murphy, 18008 Skypark Circle, Ste. 145, Irvine, CA 92714 (714) 250-0164, Account Executive/Christopher Glenn (800) 343-6474

DIRECT RESPONSE CARDS:
East: Account Manager/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

West: Account Executive/Jill Helbert, 18008 Skypark Circle, Ste. 145, Irvine, CA 92714 (714) 250-0164

IDG INTERNATIONAL MARKETING SERVICES:
President/Richard Soule, **COMPUTERWORLD,** 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 **(508) 879-0700**

West Coast Marketing Manager/Leslie Barner, 3350 West Bayshore Road, Suite 201, Palo Alto, CA 94303 (415) 424-1001

CW PUBLISHING, INC.

An IDG Company: The World's Leader in Information Services on Information Technology.

Gary Beach
CEO & Publisher

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 9171, Framingham, MA 01701-9171
Phone: 508-879-0700, Telex: 95-1153, FAX: 508-872-8564

Kevin Harold
Senior Vice-President
National Sales Director

Matthew Smith
Senior Vice-President
Chief Financial Officer

FINANCE Controller, Mark Sullivan.

SALES Advertising Director, Carolyn Novack. **Vice President Classified Advertising,** John Corrigan. **Classified Marketing Director,** Derek E. Hulitzky. **Classified Operations Director,** Cynthia Delany. **Display Advertising Production Manager,** Maureen Hanley. **Classified Sales Supervisor,** Jay Novack

MARKETING Vice President/Business Development, Jan Harper. **Manager, Marketing Communications,** Mary Doyle. **Account Manager, Marketing Communications,** Elizabeth Phillips. **Manager, Trade Show & Conventions,** Audrey Shohan. **Market Development Manager,** Chuck Boyd.

CIRCULATION Director of Circulation Management, Maureen Burke. **Director of Circulation Promotion,** Carol Spach.

SYSTEMS Director of Information Systems, Linda Nelson.

PRODUCTION Vice President/Manufacturing, Leigh Horneth. **Director of Publishing Technology,** Carol Polack. **Production Manager,** Beverly Wolff.

PUBLISHER'S OFFICE Assistant to the CEO, Karen Elliott. **Assistant to the Senior Vice-President/National Sales Director,** Nancy Gibbs.

GLOBAL LEADERSHIP NETWORK

FOREIGN EDITORIAL/SALES OFFICES

ARGENTINA: Ruben Argento, CW Communicaciones S/A, Av. Belgrano 406-Piso 9, CP 1092 Buenos Aires. Phone: (011) 54 134-5583. Telex: (390) 22644 (BAZAN AR).

ASIA: S.W. Chan, Asia Computerworld Communications Ltd., 701-4 Kam Chung Bldg., 54 Jaffe Road, Wanchai, Hong Kong. Phone: (011) 852 5 861 3238. FAX: (011) 852 5 861 1358.

AUSTRALIA: Alan Power, IDG Communications Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (011) 61 2 4395133. Telex: (790) AA74752 (COMWOR). FAX: (011) 61 2 439 5512.

AUSTRIA: Manfred Weiss, CW Publikationen Verlags Ges.m.b.H., Zieglergasse 6, A-1070 Wien, Austria. Phone: (011) 43 523 18 31 0. Telex: (847) 115542 (SCH/A) FAX: (011) 43 523 05 08 33.

BRAZIL: Ney Kruel, Computerworld do Brazil Ltda, Praca Floriano, 19/26 Andar, 2031 Rio de Janeiro, RJ Brazil. Phone: (011) 55 21 240 8225. Telex: (391) 21 30830 BR. Sao Paulo: Computerworld do Brazil Ltda., Rua Joaquim Floriano, 488/3 andar-CEP 04534, Sao Paulo, Brazil. Tel: (011) 55 11 852 8536. Telex: (391) 1132017 (WORD BR).

COLOMBIA: Heli Abel Torrado, La Nueva Ley, Computerworld-Columbia, Transv. 23 No. 5B-28, Apartado Aereo 54018, Bogota, D.E. Columbia. Tel: (011) 57 248 9010.

DENMARK: Preben Engell, IDG Danmark A/S, Krumtappen 4 DK-2500 Valby Denmark. Tel: (011) 45 36 442800. Telex: (855) 31566. FAX: (011) 45 36 442033.

FRANCE: Francois Chaussonniere, IDG Communications S.A., Immeuble La Fayette, 2, Place des Vosges, Cedex 65, 92051 Paris la Defense, France. Tel: (011) 33 1 4904 7900. Telex: (842) 613234F. FAX: (011) 33 1 4904 7800.

HUNGARY: Dezso Futasz, Computerworld Informatika Co., Kft. Pf. 386, 1536 Budapest, Hungary. Phone: (011) 3611 228 458. Telex: (861) 225307 (KSHP H). FAX: (011) 3611 423 965.

INDIA: S.K. Bhayana, Media Transasia India Ltd., 102 Anand Lok, New Delhi 110049, India. Tel: (011) 91 11 644 0110. FAX: (011) 91 11 643 2950.

ITALY: Umberto Costamagna, Computer Publishing Group CPG, Via Vida 7, 20127 Milano, Italy. Phone: (011) 39 2 2613432. Telex: (843) 335318. FAX: (011) 39 2 284 0737.

JAPAN: Jim Powell, IDG Communications/Japan, Kiocho TBR Bldg., 5-7 Kojimachi, Chiyodaku Tokyo 102, Japan. Tel: (011) 81 3 222 6411. Telex: (781) 252 4217. FAX: (011) 81 3 222 6566.

MEXICO: Henry Morales, Computerworld Mexico S.A. de C.V., Oaxaca 21-2, Mexico City 7 D.F. Colonia Roma, 06700 Mexico. Tel: (011) 52 5 514 4218 or 6309. Telex: (383) 177 1300 (ACHAME). FAX: (011) 525 511 4860.

THE NETHERLANDS: Ruud Bakker, IDG Communications B.V., de Paulus Potterstraat 18, 1071 DA Amsterdam, The Netherlands. Tel: (011) 31 20 664 6426/664 5818. Telex: (844) 18242 (CWCOM NL). FAX: (011) 3120 796 006.

NEW ZEALAND: Marion Taylor, IDG Communications Ltd., 2nd Floor, 15 Augustus Terrace, Parnell, Auckland 1, New Zealand. Phone: (011) 64 9 779 902. Fax: (011) 64 9 774 804.

NORWAY: Morten Hansen, CW Norge A/S, Hovmyeven 43, 0576, Oslo 5, Norway. Phone: (011) 472 647725. Telex: (856) 76476 (CW NOR N). FAX: (011) 47 268 0152.

PEOPLE'S REPUBLIC OF CHINA: Shen Yao, China Computerworld, 74 Lu Gu Road, Box 750, Beijing 100036, People's Republic of China. Tel: (011) 861 81 0044. Telex: (716) 222214 (CCW CN).

SINGAPORE: Asia Computerworld Communications, 04-07 Parkway Builders Centre, No.1 Marine Parade Central, Singapore 1544, Republic of China. Phone: (011) 65 345 8383. Telex: (786) RS 37003 (Comwor). FAX: (011) 65 345 7097.

SOUTH KOREA: Young-Sil Gimm, Hi Tech Information, Inc. 5th floor, Pungchun Building, 45-1 Wohyo-Ro 1 Ga, Youngsan-Gu, Seoul 140-111, Korea. Tel: (011) 82 2 719 8031. FAX: (011) 82 2 713 5971.

SPAIN: Paco Zabala, CW Communications, S.A., Rafael Calvo, 18, 4B, 28010 Madrid, Spain. Phone: (011) 34 1 419 4014. Telex: (831) 45522 (CW E). FAX: (011) 34 1 419 5104.

SWEDEN: Bengt Mamtedt, CW Communications AB, Sodra Hammvagen 22, S-115 41 Stockholm, Sweden. Tel: (011) 46 8667 9180. Telex: (854) 14904 9 (NOWACW). FAX: (011) 46 8667 8780.

SWITZERLAND: Gerhard Ostenvalder, CW Publikationen AG, Wirkonerstrasse no. 15, Postfach 253, CH - 8030 Zurich, Switzerland. Phone: (011) 41 1 55 10 77. Telex: (845) 816 710 (CWCI CH). FAX: (011) 41 1 55 1135.

TAIWAN: David Chu, IDG Communications/Taiwan, 4F-2, No. 137, Fu Hsin South Road, Sec. 1 Taipei, Taiwan, Phone: (011) 886 2 776 4553. Telex: (785) 14142 (ACEGROUP). FAX: (011) 886 2 721 6444.

LONDON: Richard Ward, CW Communications Ltd., 99 Grays Inn Rd., London, WCI 8UT, United Kingdom. Phone: (011) 44 71 405 2347. Telex: (851) 262346. FAX: (011) 44 71 405 2347.

UNITED KINGDOM: Colin Smith, Oliver Smith & Partners, 18 Abbeville Mews, 88 Clapham Park Road, London SW4 7BX, United Kingdom. Phone: (011) 44 1 978 1440. FAX: (011) 44 1 978 1550.

VENEZUELA: Katman von Vayna Nagy, IDG Comunicaciones C.A., Torre Maracaibo, Piso 10, Plaza H. Av. Libertador, Caracas, Venezuela. Phone: (011) 58 2 72 76 30. FAX: (011) 58 2 724970.

WEST GERMANY: Eckhard Utpadel, IDG Communications Verlag AG, Rheinstrasse 26/28, Postfach 40 04 29, 8000 Munich 40, West Germany. Phone: (011) 49 89 360860. Telex: (851) 5215350. (CWMW D). FAX: (011) 49 89 3 60 860 257.

INTERNATIONAL DATA GROUP, INC.

Patrick J. McGovern
Board Chairman

Walter Boyd
President

William P. Murphy
Vice President/Finance

Fritz Landesmann
Sr. Vice President

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes over 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA'S *Computerworld Argentina; ASIA'S Asian Computerworld; AUSTRALIA'S Computerworld Australia, PC World, Macworld;* AUSTRIA'S *Computerwelt Oesterreich;* BRAZIL'S *DataNews, PC Mundo;* CANADA'S *ComputerData;* CHILE'S *Informatica, Computacion Personal;* COLUMBIA'S *Computerworld Columbia;* DENMARK'S *CAD/CAM WORLD, Computerworld Danmark, PC World, Macworld, Unix World;* FINLAND'S *Mikro PC, Tietoviikko;* FRANCE'S *Le Monde Informatique, Distributique, InfoPC, Telecoms International;* HUNGARY'S *Computerworld SZT, Mikrovilag;* INDIA'S *Computers & Communications;* ISRAEL'S *People & Computers;* ITALY'S *Computerworld Italia, PC World Italia;* JAPAN'S *Computerworld Japan, Infoworld, Publish;* KOREA'S *Hi-Tech Information/Computerworld;* MEXICO'S *Computerworld Mexico, PC Journal;* THE NETHERLAND'S *Computerworld Netherlands, PC World, Amiga World;* NEW ZEALAND'S *Computerworld New Zealand, PC World New Zealand;* NIGERIA'S *PC World Africa;* NORWAY'S *Computerworld Norge, PC World Norge CAD/CAM, Macworld Norge;* PEOPLE'S REPUBLIC OF CHINA *China Computerworld, China Computerworld Monthly;* POLAND'S *Computers;* SPAIN'S *CIM World, Communicaciones World, Computerworld Espana, PC World, Amiga World;* SWEDEN'S *Computer Sweden, PC/Nyheterna, Mikrodatorn, PC World, Macworld;* SWITZERLAND'S *Computerworld Schweiz;* TAIWAN'S *Computerworld Taiwan, PC World;* UNITED KINGDOM'S *Graduate Computerworld, PC Business World, ICL Today, Lotus UK, Macworld U.K.;* UNITED STATES' *Amiga World, CIO, Computerworld, Digital News, Federal Computer Week, GamePro, inCider, InfoWorld, International Custom Publishing, Macworld, Network World, PC Games, PC World, Portable Computing, PC Resource, Publish!, Run, Sun Tech Journal;* U.S.S.R.'S *PC World U.S.S.R., Monager, PC Express, Network;* VENEZUELA'S *Computerworld Venezuela, Micro Computerworld;* WEST GERMANY'S *Computerwoche, Information Management, PC Woche, PC Welt, Amiga Welt, Macwelt.*

ADVERTISERS INDEX

A.A.A.I. 106
Apple Computer 18-19
Applied Learning International 95
Ashton-Tate 52-53
Ask Computer 56-57
AT&T 70-71
AT&T Paradyne 89, 91, C3

B I Moyle Associates, Inc. 29
Banyan Systems 64-65
BMC Software 73
Borland International 92

Cambex Corp. 86
Candle Corp. 41, 105
CCD Online Systems, Inc. 72
Codex 98
Cognos Corp. 110
Comdisco. 90
Compaq Computer Corp. 50-51
Computer Associates 72
CW Reprints 118
CW Smithsonian 87

Data General 21
Data Preference 10
DCA 46
Digital Equipment Corp. 78, 81-84

Encore Computer Corp. 104

Fifth Generation 55

Gandalf Technologies, Inc. 88
GEJAC 33

Hewlett-Packard 14-15, 36-37

IBM 30-31, 44, 114-115
IDEAssociates 34-35
Information Builders 13, 49, 99, 100, 101
Information Resources 106
Informix 63
Intel Corp 42-43

Kimberly-Clark Computer Services 85
Knowledgeware 96-97

Landmark 101

LXE 67
Micro Focus 45
Mozart 58
Must Software 76

Network Systems 62
Novell, Inc. 74-75

Oracle Corp 5, 9

Peregrine Systems 108
Platinum Technology 38-39
Progress Software 32

SAS Institute 17, 77
Scientific American 116
Software AG 28
Software Engineering of America C4
SQL Solutions 12
Sun Microsystems 60-61
Sybase, Inc. 11
Syncsort 3
Synoptics 102-103
Systems Center 7

Trax Softworks 99

Uniface 16
Unisys 68-69
U.S. Sprint 22-23

Workstation Group 80
Wyse Technology 26-27

XDB Systems 47

Zenith Data Systems 112-113

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Have A Problem With Your Subscription?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line. Please allow six weeks for processing time.

Your New Address Goes Here

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Address shown: ☐ Home ☐ Business

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available:

1-800-669-1002

Outside U.S. call: (614) 382-3322

COMPUTERWORLD

P.O. Box 2043, Marion, Ohio 43305

Think of it as the ultimate weapon for heavy hitters.

Welcome to the big leagues. Where the action is fast and furious. And where the competition plays only one kind of ball — hard ball.

If you want to stay on top of your game, you have to stay on top of the fastest breaking news in the information industry — by subscribing to *Computerworld*.

Order now and you'll receive 51 power-packed issues, filled cover to cover with articles on topics ranging from products and people to trends and technology.

Plus you'll get our special bonus publication, *The Premier 100*, an annual profile of the top companies using information systems technology.

According to a study conducted by the Adams Company, an independent research firm, *Computerworld* is the best-read publication in the industry — especially among heavy hitters.

So don't get left off your company's starting line-up. Use the postage-paid subscription card bound into this issue. And get your own copy of *Computerworld*.

Because out there in the world of information systems, it's a whole new ballgame.

COMPUTERWORLD

INDUSTRY ALMANAC

INVESTMENT FOCUS: LARGE-SYSTEMS VENDORS

Several factors, including the hoo-ha over companies migrating to open systems and downsizing from monster machines to personal computer-based setups, have knifed the stock prices of mainframe and minicomputer vendors during the past three months, analysts said.

While Wall Street watchers would not generalize about the entire large-systems sector, they said the soft U.S. economy and unfavorable currency translation rates from overseas — as well as vibrations from the above-mentioned buzzwords and various company-specific problems — threaten big iron vendors in different ways. Not all of the news is bad; some companies seem to be withstanding the pressure. Either way, though, investors have taken heed.

Unisys Corp. In April, the fourth largest computer maker in the U.S. reported a 1991 first-quarter loss of $98 million — far deeper than the $3 million hole it was in during the previous quarter. Sales slid 10% for the first three months of this year. Although it was expected, the deficit helped reinforce sentiment that Unisys has its work cut out for it if it wants to regain the public's confidence, according to David Schofield Jr., an analyst at Duff & Phelps Investment Research Co. in Chicago. Unisys shares have been stomped down 30% since the beginning of March, sinking from 5½ to 3⅞ as of late May.

Digital Equipment Corp. Although 23% of DEC's share price has evaporated since March, Duff & Phelps analyst Marty Ressinger just upgraded the stock to a buy. The stock slipped from 81¾ in March to 63 in late May. The latest financial reports show disappointing sales for the VAX 9000. Ditto for the VAX 6000, and workstation revenue fell short of the overall market growth rate. Ressinger acknowledged that displacement of minicomputers by networked workstations and PCs has put DEC in a bad spot.

However, overall third-quarter sales topped $3.5 billion, up 8% over the same quarter last year. The "surprising strength" of the company's service business gave Ressinger hope for the long-term worth of its stock, he said. That, coupled with the current short-term stock price weakness, makes DEC a good deal now, he added.

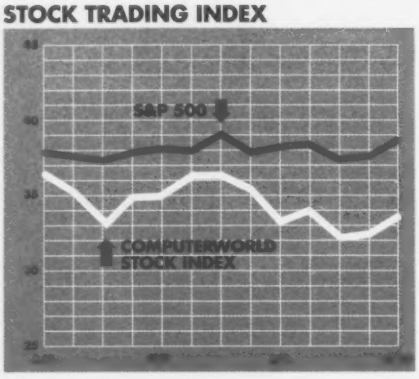
IBM. Analysts were divided over IBM's recent financial shortfall. And they still are. IBM ratings run the gamut from sell (Prudential Securities, Inc.) to strong buy (Bear Stearns & Co.). Weak mainframe business and scuttlebutt about headcount reductions may have led to IBM's 21% share price drop, from 132½ in March to a recent close of 104⅝, Prudential's Rick Martin said.

NCR Corp. NCR is strong in retail and financial markets and is well-managed, with "very strong finances," Schofield said. Investors have apparently noticed. As the stop-and-go NCR/AT&T merger chugged along, NCR shares climbed from 97⅝ to 103¼ during the last three months, up nearly 6%.

As the merger takes hold and before stock conversions from NCR to AT&T begin, NCR shareholders must decide whether to sell or wait and convert their stock to AT&T stock. For someone who bought NCR "because it's a progressive computer company, holding a large telecommunications company that has a new computer division may not be appropriate," Schofield said.

KIM S. NASH

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

- As the Dow Jones industrial average rode past the 3,000 mark last week, several technology stocks closed higher. Among the bigger gainers, Novell, Inc. soared 4 points last week to close Thursday at 57¼; Intel Corp. added 2¾ to 53¼; and Digital Equipment Corp. advanced 3¾ points to 66¾.
- Autodesk, Inc. hit a new high of 60¼ Thursday, up 3½ points for the week. NCR Corp. also topped its previous apex, climbing 2⅜ to 105⅝. AT&T rose 2 points to 37⅜.
- Dell Computer Corp. posted a hefty profit jump for its first quarter; Dell shares picked up 1¼ points to 25¼. Everex Systems, Inc. reported a third-quarter loss last week; its stock inched up ⅛ of a point to 5¼.
- Elsewhere, IBM lost ¼ of a point, closing at 104⅜. Investors shaved ⅜ of a point from both Hogan Systems, Inc. and Oracle Corp. The stocks closed at 6 and 7¾, respectively.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, MAY 31, 1991

TOP PERCENT GAINERS

Businessland Inc.	28.57
Wang Labs Inc. (b)	21.74
Dataram Corp.	21.52
3 COM Corp.	18.97
Ariel Communication Corp.	18.75

TOP PERCENT LOSERS

Selecterm Inc.	-16.67
Oracle Systems	-11.76
Data Switch Corp.	-11.76
MAI Systems Corp.	-9.16
Televideo Systems	-7.64

TOP DOLLAR GAINERS

3M Corp	7.38
Digital Equipment Corp.	5.88
Intel Corp.	4.75
Hewlett Packard Co.	3.63
ITT Corp.	3.50

TOP DOLLAR LOSERS

Shared Medical Systems	-1.63
Computer Sciences	-1.50
Oracle Systems	-1.00
Micropolis Corp.	-0.75
Selecterm Inc.	-0.75

Communications and Network Services — Up 3.97%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
OTC	19.00	5.38	3 COM Corp.	8.63	1.38	18.97
NYS	69.75	52.50	American Info Techs Corp.	60.38	2.13	3.65
NYS	44.13	29.00	AT&T	37.13	1.13	3.13
OTC	6.25	0.88	Ariel Communication Corp.	2.38	0.38	18.75
NYS	56.25	39.50	Bell Atlantic Corp.	47.13	1.38	3.01
NYS	57.25	47.00	Bellsouth Corp.	49.88	1.63	3.37
NYS	44.00	13.13	Cabletron Systems	38.25	2.13	5.88
OTC	25.88	8.25	Compression Labs Inc.	20.13	2.38	13.38
NYS	41.25	23.38	Contel Corp.	41.00	0.00	0.00
OTC	5.13	2.75	Data Switch Corp.	3.75	-0.50	-11.76
NYS	26.13	8.88	Digital Comm. Assoc.	17.63	1.63	10.16
OTC	25.25	12.25	Dynatech Corp.	19.75	-0.75	-3.66
OTC	12.88	5.50	Fibronix Int'l Inc.	9.00	-0.13	-1.37
OTC	4.00	1.75	Gandalf Technologies Inc.	3.38	0.13	3.85
NYS	4.50	1.63	General Datacomm Inds.	3.25	0.00	0.00
NYS	33.50	23.50	GTE Corp.	30.00	0.50	1.69
NYS	61.88	40.25	ITT Corp.	61.88	3.50	6.00
OTC	44.13	17.88	MCI Commmunications Corp.	31.50	2.50	8.62
OTC	20.00	2.75	Microcom Inc.	6.63	-0.38	-5.36
NYS	10.88	4.00	Network Equipment Tech.	8.88	0.25	2.90
OTC	14.63	4.00	Network General	7.50	-0.13	-1.64
OTC	15.50	8.13	Network Systems Corp.	13.13	1.50	12.90
NYS	37.50	22.13	Northern Telecom Ltd.	37.50	0.83	1.69
NYS	58.50	17.25	Novell Inc.	57.00	3.25	6.05
NYS	89.50	67.00	Nynex Corp.	71.88	1.38	1.95
NYS	47.50	36.25	Pacific Telesis Group	40.75	1.75	4.49
ASE	15.38	4.75	Penril Corp.	14.50	0.00	0.00
NYS	29.00	8.88	Scientific Atlanta Inc.	13.75	0.00	0.00
NYS	58.88	47.25	Southwestern Bell Corp.	51.75	1.75	3.50
NYS	45.25	20.63	United Telecom	28.88	2.13	7.94
NYS	40.75	32.38	US West Inc.	36.75	0.38	1.03

Computer Systems — Up 4.83%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
OTC	8.75	0.56	Alliant Computer Sys.	0.88	0.00	0.00
ASE	18.88	10.00	Amdahl Corp.	16.63	0.50	3.10
OTC	73.25	24.25	Apple Computer Inc.	47.00	1.13	2.45
OTC	13.88	4.25	Archive Corp.	7.25	0.63	9.43
OTC	32.75	7.50	AST Research Inc.	23.50	1.13	5.03
NYS	6.00	4.00	Bolt, Beranek & Newman	7.88	0.13	1.61
NYS	21.63	4.50	Commodore Int'l	16.50	0.25	1.54
NYS	74.25	34.38	Compaq Computer Corp.	38.13	1.13	3.04
OTC	2.13	0.13	Computer Automation Inc.	1.25	0.13	11.11
NYS	21.13	6.75	Control Data Corp.	11.50	0.38	3.37
NYS	20.88	8.38	Convex Computer	19.00	2.25	13.43
NYS	51.25	20.00	Cray Research Inc.	35.25	2.88	8.88
NYS	18.13	3.50	Data General Corp.	16.63	0.00	0.00
NYS	3.25	0.75	Datapoint Corp.	1.75	0.00	0.00
OTC	30.63	8.25	Dell Computer Corp.	24.75	0.25	1.02
NYS	92.38	45.50	Digital Equipment Corp.	66.63	5.88	9.22
NYS	36.13	13.75	Harris Corp.	26.88	1.75	6.97
NYS	55.13	24.88	Hewlett Packard Co.	54.50	3.63	7.13
NYS	139.75	96.25	IBM	106.38	1.50	1.43
OTC	14.00	7.75	Information Int'l	8.25	0.25	3.13
OTC	31.50	10.50	Intergraph	29.75	0.75	2.59
NYS	2.75	0.50	MAI Systems Corp.	0.63	-0.06	-9.16
NYS	149.75	114.00	Matsushita Electronics	122.00	2.25	1.88
OTC	26.00	9.00	Mentor Graphics Corp.	18.00	1.25	7.46
NYS	105.75	44.50	NCR Corp.	105.75	2.00	1.93
OTC	33.50	11.00	Pyramid Technology	29.50	1.75	7.69
OTC	34.00	9.75	Sequent Computer Sys.	15.13	1.13	8.04
NYS	47.25	18.00	Silicon Graphics	33.50	1.38	4.28
NYS	37.25	14.63	Stratus Computer Inc.	33.13	2.25	7.29
NYS	38.63	15.00	Sun Microsystems Inc.	36.88	2.00	5.73
NYS	28.88	8.88	Tandem Computers Inc.	17.38	1.88	12.10
NYS	39.50	23.50	Tandy Corp.	33.63	2.38	7.60
OTC	32.00	6.75	Teradata	17.25	0.50	2.99
NYS	7.88	1.38	Ultimate Corp.	5.00	0.00	0.00
NYS	15.88	1.75	Unisys Corp.	3.88	0.00	0.00
ASE	5.75	2.00	Wang Labs Inc. (b)	3.50	0.63	21.74

Software & DP Services — Up 3.26%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
OTC	53.00	17.00	Adobe Systems Inc.	50.50	1.25	2.54
OTC	13.50	7.00	Aicorp	7.75	0.25	3.33
OTC	56.88	20.25	Aldus Corp.	52.00	1.50	2.97
OTC	28.50	12.00	American Mgmt. Systems	27.25	0.00	0.00
OTC	18.25	7.50	American Software Inc.	12.25	0.50	4.26
NYS	4.63	1.38	Anacomp Inc.	3.38	-0.13	-3.57
OTC	23.50	10.00	Analysts Int'l	15.50	0.00	0.00
OTC	13.25	4.88	Ashton Tate	9.88	0.50	5.33
OTC	10.25	4.00	ASK Computer Sys.	7.88	-0.13	-1.56
NYS	37.00	22.63	Auto Data Processing	34.00	1.50	4.62
OTC	60.25	32.00	Autodesk Inc.	58.63	2.75	4.92
OTC	31.50	18.50	BGS Systems Inc.	27.00	0.75	2.86
OTC	43.88	17.75	BMC Software Inc.	38.75	1.25	3.33
OTC	21.50	11.00	Boole & Babbage Inc.	12.75	0.25	2.00
OTC	64.25	14.50	Borland Int'l	51.75	-0.38	-0.72
NYS	9.75	0.44	Businessland Inc.	1.13	0.25	28.57
OTC	20.88	5.13	Cognos Inc.	15.75	1.00	6.78
NYS	16.88	4.38	Computer Associates	9.75	0.63	6.85
OTC	17.75	9.50	Computer Horizons	10.25	0.00	0.00
NYS	73.25	36.75	Computer Sciences	65.75	-1.50	-2.23
NYS	11.75	6.63	Computer Task Group	9.25	-0.13	-1.33
OTC	25.25	13.00	Comshare Inc.	18.00	0.00	0.00
OTC	16.00	3.75	Corporate Software	10.63	0.38	3.66
NYS	49.00	27.88	General Motors E (EDS)	47.88	0.25	0.52
OTC	18.75	7.25	Goal Systems Int'l	13.50	0.75	5.88
OTC	7.00	1.88	Hogan Systems Inc.	6.13	0.00	0.00
OTC	23.63	7.75	Information Resources	23.13	0.25	1.09
OTC	17.50	2.63	Informix Corp.	6.25	0.19	3.06
OTC	7.88	1.38	Intellicorp Inc.	1.69	-0.06	-3.54
OTC	8.25	2.50	Interleaf Inc.	6.38	-0.13	-1.92
OTC	15.88	6.88	Intersolv	9.25	1.25	15.63
OTC	43.25	10.00	Knowledgeware Inc.	32.88	3.00	10.04
OTC	45.00	16.75	Legent Corp.	31.00	3.50	12.73
OTC	39.25	12.50	Lotus Development	36.00	2.88	8.68
OTC	32.00	13.63	Micrografx	15.75	0.25	1.61
OTC	117.50	50.75	Microsoft Corp.	109.75	-0.25	-0.23
NYS	10.50	4.00	On Line Software Int'l	8.50	0.00	0.00
OTC	24.00	4.88	Oracle Systems	7.50	-1.00	-11.76
NYS	14.63	7.00	Pansophic Systems	12.63	1.13	9.78
OTC	9.25	1.25	Phoenix Technologies	8.00	0.38	4.92
NYS	52.00	33.38	Policy Management Sys.	48.88	2.50	5.39
NYS	23.63	11.50	Reynolds & Reynolds	22.38	1.50	7.19
OTC	25.75	14.75	SEI Corp.	25.50	0.25	0.99
OTC	22.75	12.50	Shared Medical Systems	20.75	-1.63	-7.26
OTC	35.25	12.00	Software Publishing Corp.	20.25	1.50	8.00
NYS	14.63	5.50	Sterling Software	13.50	0.00	0.00
OTC	26.00	9.50	Sungard Data Sys.	17.25	1.25	7.81
OTC	55.88	17.75	Symantec Corp.	44.00	1.25	2.92
NYS	24.50	4.50	System Center Inc.	9.00	0.50	5.88
OTC	37.25	12.50	System Software Assoc.	13.75	0.00	0.00
OTC	24.88	4.75	Wellek	12.50	0.75	6.38

Semiconductors — Up 4.05%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
NYS	14.25	3.63	Advanced Micro Devices	13.50	0.50	3.85
NYS	12.50	5.50	Analog Devices Inc.	11.00	0.25	2.33
OTC	21.75	5.25	Chips & Technologies	9.75	0.25	2.63
OTC	55.75	28.00	Intel Corp.	55.75	4.75	9.31
NYS	13.00	5.13	LSI Logic Corp.	10.50	0.25	2.44
NYS	19.13	6.75	Micron Technology	16.63	1.75	11.76
OTC	21.25	7.25	MIPS Computer Systems	16.63	0.50	3.10
NYS	88.38	45.75	Motorola Inc.	71.25	2.88	4.20
NYS	8.38	3.00	National Semiconductor	7.00	0.00	0.00
NYS	47.63	22.50	Texas Instruments	39.13	2.00	5.39
OTC	12.25	3.00	VLSI Technology	10.63	0.63	6.25
ASE	14.88	4.00	Western Digital Corp.	4.63	-0.13	-2.63

Peripherals & Subsystems — Up 3.24%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
OTC	2.75	0.88	Apertus Technologies	2.25	0.00	0.00
OTC	24.00	7.50	Banctec Inc.	13.75	1.00	7.84
OTC	17.50	4.25	Cambex Corp.	13.25	1.75	15.22
ASE	11.75	4.13	Cognitronics Corp.	9.63	0.50	5.48
NYS	31.25	14.63	Conner Peripherals	21.00	0.50	2.44
ASE	22.00	7.00	Datarem Corp.	12.00	2.13	21.52
NYS	13.00	4.25	EMC Corp.	11.38	0.13	1.11
NYS	47.25	33.75	Eastman Kodak Co.	42.38	1.38	3.35
OTC	11.25	4.75	Emulex Corp.	8.75	0.25	2.94
OTC	32.25	14.00	Evans & Sutherland	20.25	1.50	8.00
OTC	6.50	3.88	Iomega Corp.	5.50	0.00	0.00
OTC	28.25	6.75	IPL Systems Inc.	23.25	-0.25	-1.06
OTC	1.63	0.13	Masstor Systems	0.75	0.00	0.00
OTC	16.50	2.63	Maxtor Corp.	4.13	-0.13	-2.94
OTC	18.00	4.38	Micropolis Corp.	14.38	-0.75	-4.96
NYS	95.25	73.63	3M Corp	95.25	7.38	8.39
OTC	14.50	6.00	Printronix Inc.	7.25	-0.25	-3.33
NYS	24.75	8.50	QMS Inc.	22.38	1.63	7.83
OTC	18.25	8.25	Quantum Corp.	11.88	0.00	0.00
NYS	7.63	4.38	Recognition Equipment	7.38	0.00	0.00
OTC	11.50	4.00	Rexon Inc.	10.00	0.38	3.90
OTC	19.88	5.63	Seagate Technology	11.38	0.63	5.81
NYS	47.00	11.00	Storage Technology	44.50	1.13	2.59
OTC	4.75	1.25	Tandon Corp.	3.69	0.50	15.68
NYS	26.38	11.63	Tektronix Inc.	22.63	-0.63	-2.69
OTC	0.63	0.16	Televideo Systems	0.38	-0.03	-7.64
NYS	60.13	29.00	Xerox Corp.	58.00	0.63	1.09

Leasing Companies — Off 2.10%

Exch	52-Week			May 31 Close	Wk Net Change	Wk Pct Change
OTC	16.25	7.00	Amplicon Inc.	16.00	1.25	8.47
NYS	28.38	14.63	Comdisco Inc.	24.75	-0.38	-1.49
OTC	16.25	9.25	LDI Corporation	15.00	-0.13	-0.83
OTC	5.75	2.25	Selecterm Inc.	3.75	-0.75	-16.67

Copyright Nordby International, Inc., Boulder, CO

THIS INFORMATION IS OBTAINED FROM SOURCES BELIEVED TO BE RELIABLE, BUT CANNOT BE GUARANTEED TO BE COMPLETELY ACCURATE. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

Technology

FROM PAGE 1

suppliers to provide information electronically, in standard formats, rather than on paper. By one estimate, the government and its contractors are spending $2 billion per year to make their systems CALS-compliant.

As part of the Seawolf design project, Newport News is delivering a live example of CALS in the Seawolf Automated Integrated Logistics Support (Sails) system. Sails provides the logistics for a life cycle support view of the ship throughout its 40-year life span and contains unclassified information about repairable and replaceable parts.

Kittelberger *oversees revamping of technology*

Sails will run on an IBM Enterprise System/9000 mainframe, under both the IDMS database from Computer Associates International, Inc. and IBM's DB2, with worldwide access for Navy personnel and authorized contractors, said Frank Brake, manager of strategic systems architecture at Newport News.

The Seawolf CALS work is one prominent dividend of the company's long-term investment in information technology.

The hardware architecture includes five IBM mainframes for administration, design, product modeling and materials requirements.

Digital Equipment Corp. VAX 6000s, 4000s and workstations handle manufacturing and process control, and AT&T equipment is used for the shipyard's telecommunications operation — a System 85 private branch exchange larger than the Pentagon's.

With approximately 10,000 active users and 6,000 workstations and personal computers on the company network, network management is a growing concern that has led Newport News to serve as a beta-test site for a joint networking management project with IBM's Systemview and AT&T's Accumaster Integrated Network Management.

Software export

The firm is also exporting its in-house software through a new business development organization. This summer, DEC will begin marketing the shipyard's Planning Workbench, a manufacturing process planning tool that runs on Vaxstation 3100s and will soon be ported to Unix operating systems from AT&T, DEC and IBM.

Brake *manages firm's strategic systems architecture*

Newport News' technology transition began in earnest in 1983-84, with the migration of hundreds of applications off of Honeywell Bull, Inc. machines onto IBM mainframes.

During the past six years, the technology group integrated a host of separate systems running computer-aided design, manufacturing and engineering (CAD/CAM/CAE) applications onto IBM 3090s and, more recently, ES/9000s.

The largest application on the ES/9000s is the company's CIM initiative — called Argos after the mythical Greek shipbuilder who created the vessel for Jason to pursue the Golden Fleece.

Manufacturing a product with 1 million parts requires databases so large in size — most of them exceeding 400G bytes — that distributing the database is still too difficult to attempt, Kittelberger said.

"What really bugs me is the slowness of breakthroughs in technology. Storage media is just too slow in access time for us," he said.

Newport News vs. the U.S. Navy

Newport News Shipbuilding, which employs 29,000 people in the U.S., is making news in its hometown these days by suing its largest customer — the U.S. Navy.

A U.S. district judge has set July 11 as the starting date for the shipyard's lawsuit, in which it claims the U.S. Department of Defense illegally interfered with the Navy's award of the second Seawolf nuclear submarine construction contract. The contract went to Newport News' only competitor, the Electric Boat Division of General Dynamics Corp. based in Groton, Conn.

Because the construction contract would have played such an important role in the firm, its loss could shrink the firm's 500-employee technology organization. Yet industry analysts said the shipbuilder is diversified enough to survive, with its refueling business and production of commercial shipping vessels and aircraft carriers.

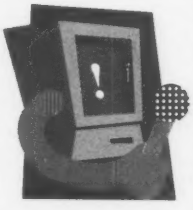
Keeping the company afloat are $8.5 billion worth of contract orders for the next five years, said Gary Schneider, a research analyst at Bear Stearns & Co. in New York. With yearly earnings between $200 million and $220 million, the shipyard is a reliable revenue producer for its parent company, Houston-based Tenneco, Inc., Schneider said.

Voice recognition wins fans

BY CHRISTOPHER LINDQUIST
CW STAFF

A pair of voice recognition companies recently announced major contracts for their products, indicating that some people are very interested in talking to their computers.

Verbex Voice Systems, Inc. in Edison, N.J., announced that it has signed a contract with EJV Brokerage, Inc. in New York for a voice-controlled bond trading system. The contract, valued at more than $500,000, according to a Verbex spokesman, is for hardware and software that will allow traders to speak commands into a workstation rather than typing or inputting handwritten notes.



A spokesman for EJV indicated that the firm hopes the system will increase the accuracy and speed with which traders can make transactions.

Separately, Kurzweil Applied Intelligence, Inc. in Waltham, Mass., announced a $500,000 contract with Science Applications International Corp. (SAIC) in San Diego for a voice reporting system to be used in U.S. military medical centers.

The voice system will be part of the Composite Health Care System, a government plan for computerizing U.S. military medical installations in the U.S. and Germany. SAIC, a firm specializing in science and high technology for defense, health care and environmental organizations, was awarded the $1 billion contract in 1988.

Jack McGuire, assistant vice president of marketing at SAIC, said the 26 Kurzweil systems will be installed at 13 locations on a test basis to determine the viability of voice recognition for use in medical reporting. If the systems are found to be effective, he said, SAIC will consider installing such devices in 200 or more sites. He added that although Kurzweil is being tested, future contracts could be awarded to other companies.

John Overteuffer, president of Voice Information Associates, Inc. also in Waltham, said such contracts indicate voice recognition technology is approaching the "hockey stick" curve for market acceptance. He predicted that installation of such systems will increase rapidly over the next few years.

Systems Center opens up Systems Management line

BY ELISABETH HORWITT
CW STAFF

RESTON, Va. — Systems Center, Inc. last week released Version 2 Release 2 of its Advanced Systems Management product line, promising integration with other vendors' products, including IBM's, through a variety of industry standards.

The new version of Systems Center's operations management product, Info/Master, will be able to access information from any management product with a SQL-compliant database, the vendor said.

One such platform is IBM's Systemview. Systems Center "intends to offer solutions within the Systemview structure" and will conform with the IBM Common User Access interface used in Systemview by year's end, said Dale Vecchio, director of Net/Master product marketing.

Supports two protocols

The latest version of Net/Master, Systems Center's network management platform for IBM Systems Network Architecture (SNA) networks, is said to support two key IBM protocols: LU6.2 and Program-to-Program Interface. This will extend Net/Master's reach to all third-party devices and software programs that use those protocols to interact with IBM's Netview, Vecchio said.

Net/Master has about 7% of the installed base of IBM mainframe network management systems, compared with 93% for Netview, according to research firm Computer Intelligence.

Baxter Healthcare Corp., a beta-test site for Systems Center's latest releases, welcomes the idea of using LU6.2 instead of the less-efficient 3270 to link Net/Master and CICS-based applications, according to Michael Stough, a project leader at the firm. The company is waiting to see if host-based network monitoring packages will support the peer-to-peer protocol.

Baxter is also very interested in using the Program-to-Program Interface to link Net/Master with third-party management systems such as Legent Corp.'s Netspy, Stough said.

SQL support from Net/Master will make it easier for companies such as Baxter to interface Net/Master with complementary software products. For example, Baxter is likely to go with a DB2-based configuration database, Stough said.

Systems Center also announced Mapped Data Services, a utility for translating network management formats. The vendor intends to use this offering to interface with other vendors' networking and network management systems that comply with industry standards, Vecchio said.

In the works is support for Open Systems Interconnect network management protocols and Simple Network Management Protocol, he added.

Marked improvement

The new release of Systems Center's Resource Status Monitor shows marked improvement in the area of graphics-based user-friendliness, said Steve Moy, Baxter's senior technical consultant. The earlier release offered some graphical features but was still too textual, Moy added. The new release is said to indicate the status of network devices with "traffic light" colors and to handle SNA and non-SNA devices.

Another potentially useful Net/Master enhancement, Moy said, is the ability to group SNA devices by resource type. "We are looking to partition resources according to our logical network, so that users can identify easily what components or resource group is in trouble."

Systems Center said it plans to release the new versions in the third quarter.

NEWS SHORTS

Apple execs lose fraud case

A short-lived product offering came back to haunt Apple Computer, Inc. last week when a federal court in San Francisco found securities fraud in Apple's 1982 announcement and subsequent cancellation of a disk drive product. The court held Apple co-founder and Vice Chairman A. C. Markkula and former Apple executive John Vennard liable for some $100 million in damages. The judgment is considered significant because few stockholder suits against computer firms have actually come to trial. Apple said it will appeal the verdict.

Dell releases smaller 386SX PC

Dell Computer Corp. last week introduced the 320SX, a desktop personal computer based on Intel Corp.'s 20-MHz 386SX chip. The machine has a footprint of roughly 15 sq in. and comes with 2M bytes of random-access memory, an 80M-byte hard drive, 16K bytes of cache memory, a 16-bit IBM Video Graphics Array-compatible adapter and a $2,597 price tag. Dell said the 320SX would replace its 320LX, which had a 20-MHz SX desktop in a larger chassis.

Another rosy ISDN forecast

The number of Integrated Services Digital Network (ISDN) interfaces on private branch exchange systems will nearly triple over the next 12 months, according to a recent survey by Datapro Information Services Group. While only 9% of the 575 telecommunications professionals who responded to the survey said they currently use the ISDN interface, 24% said they plan to add the interface during the next year, the Delran, N.J.-based research firm reported.

Amdahl boosts speed

Enhancements introduced by Amdahl Corp. last week reportedly increase the performance of its 4745 communications processors by as much as 80% and also permit each device to handle eight host-processing units instead of only six, according to the company. In addition, Amdahl introduced an optional scanner that supports U.S. 1.5M bit/sec. T1 and European 2M bit/sec. E1 connections on the 4745. The products are scheduled to be available in the third quarter.

Unisys divests real estate holding

Unisys Corp. sold its Detroit office building and 31 acres of land to Henry Ford Health System. With this sale, Unisys has sold more than $200 million in assets, mostly in real estate, since it began an asset sales program in early 1990 to pay down its debt. Unisys will lease back part of the Detroit facilities from Henry Ford Health System.

Aldus adds photo package

Aldus Corp. added Style to its Windows platform with the acquisition of the worldwide marketing and publishing rights to Photostyler, a full-color image processing program. The software, which was originally developed by Taiwan-based U-Lead Systems, Inc., allows Windows users to scan, enhance, compose and print images ranging from 24-bit color to black and white and to export them to desktop, presentation graphics and multimedia applications.

PBXs on tap at ICA

Northern Telecom, Inc. will reportedly follow through on analyst predictions in March of a "PBX-on-a-wall" announcement at this week's International Communications Association convention in Anaheim, Calif. Dubbed Option 11, the standard 70-pound unit will reportedly include 75 ports, a T1 interface and voice mail for about $22,000. Meanwhile, Siemens Private Communication Systems, Inc. said it will demonstrate a Microsoft Corp. Windows 3.0-based private branch exchange (PBX) management program it announced last week. The $3,000 database management package is said to allow Siemens Saturn PBX administrators to use a PC to handle moves and changes.

Prime chief lays out cost control plans

BY SALLY CUSACK
CW STAFF

BEDFORD, Mass. — Prime Computer, Inc.'s president and chief executive officer, John J. Shields, will attempt this week to reassure a skittish customer base about the company's eroding financial situation. In an interview last week, Shields said he will outline at the National Prime User Group meeting plans for achieving internal cost control and several new products to be announced during the next few months.

Earlier this month, Prime's parent company, DR Holdings, Inc., released first-quarter results revealing an $84.4 million net loss for Prime.

"We had a fantastic 1990 and a good plan for 1991, which assumed a flattish revenue for that year," Shields said. "When we got into '91, we got a surprise."

The strengthening of the U.S. dollar abroad, along with the economic recession and Persian Gulf war, resulted in poor first-quarter performance, according to Shields.

Operating income in the first quarter of 1991 was listed as $11.8 million, compared with $23.2 million in the corresponding quarter the previous year.

The first priority will be to establish an expense level based on a lower population at the company, Shields said, adding that Prime will identify areas for saving expense through attrition. An estimated 8,300 people are currently on the Prime payroll, and the company said it plans to reduce that number by 700 by the end of 1991.

Shields said most of the reduction will come through normal attrition. A hiring freeze is now strongly being enforced directly by Shields. "No one can replace anyone without my personal approval," he said.

In addition, Prime has instituted a two-week mandatory vacation policy for employees. Employees may use accrued vacation time during these periods, and Shields estimated that profit and loss will be directly affected by $7 million as a result of the new policy.

While Shields declined to say which of the company's business units was most profitable, analysts and industry observers agreed that the Computervision Division's computer-aided design and manufacturing (CAD/CAM) product line is growing at a healthy rate as revenue from the traditional minicomputer business is falling off.

Restating Prime's commitment to its core 50 series customers, Shields said users could look forward to several forthcoming announcements.

> "WE HAD A FANTASTIC 1990 and a good plan for 1991, which assumed a flattish revenue for that year. When we got into '91, we got a surprise."
>
> JOHN J. SHIELDS
> PRIME COMPUTER, INC.

These will include not only software products for the Computervision CAD/CAM customers but also software for the proprietary PrimOS systems and EXL Unix boxes.

Prime has been privately owned by DR Holdings since 1988, when the latter rescued the minicomputer maker from a hostile takeover attempt.

Microsoft eases LAN license policy

BY JIM NASH
CW STAFF

Microsoft Corp. is relaxing its software licensing policy for networked applications software to require payment only for the maximum number of concurrent users. Previously, the company had required a license for each authorized user on a network, whether the user was concurrently logged on or not.

Information systems managers reacted favorably to news of the policy change, announced during a panel discussion at Comdex/Spring '91 last month. Microsoft joins a growing group of personal computer software vendors, including Symantec Corp., Lotus Development Corp. and Software Publishing Corp., that are moving to concurrent licensing.

Mike Maples, vice president of applications at Microsoft, said the new policy is effective immediately. It replaces an 18-month-old statement that prohibited users from transferring an application and its license electronically to another machine.

Under the new policy, for example, companies with 60 employees who use a given application would be required to buy licenses only for the number of employees who would use the software simultaneously.

If the user guaranteed that only 40 of those employees would use Microsoft Word at one time, for example, the company would have to buy only 40 licenses.

> IF THE USER guaranteed that only 40 of those employees would use Microsoft Word at one time, the company would have to buy only 40 licenses.

"That's what everyone wants to see," said Brian Moura, assistant city manager in San Carlos, Calif. Moura said network managers will be relieved not to have to build unique Microsoft Windows interfaces for different employees based on their access privileges.

"This is more in tune with current computing styles," said Ron Houck, senior systems designer at Marion Merrell Dow, Inc., a pharmaceuticals research firm in Indianapolis.

There are several methods of automatically regulating access to applications, said Emily Pennington, staff technician at Du Pont Co. in Wilmington, Del. Microsoft's LAN Manager network operating system has a facility for regulating concurrent access on a network, and a similar utility is sold by Brightwork Development, Inc. in Tinton Falls, N.J. "This is good business sense," Pennington said.

"This is a smart move on Microsoft's part," said Dick Nelson, systems analyst at New York Life Insurance Co. "It lets them make money on their product, but it also is reasonable" for users, he said.

Staff writer Christopher Lindquist contributed to this report.

CA links mainframe DBMS to spreadsheet

BY JOHANNA AMBROSIO
CW STAFF

WASHINGTON, D.C. — What do you get when you cross a high-powered personal computer spreadsheet with the ability to access mainframe databases? A new data-manipulation tool, which is what Computer Associates International, Inc. announced last week.

Essentially, CA integrated its Compete spreadsheet-like software, which runs under MS-DOS and Microsoft Corp.'s Windows 3.0 on PCs, with its CA-Datacom and CA-IDMS mainframe database management systems. Compete, which CA acquired in January, allows up to 12 views of information.

These capabilities are similar to Lotus Development Corp.'s Datalens package, which feeds information from mainframe, Unix and Digital Equipment Corp. databases into Lotus' 1-2-3 spreadsheet package.

However, Jeff Tash, president of Database Decisions in Newton, Mass., said that while Datalens hooks into many more database management systems, Compete has a lot more powerful modeling capabilities.

The essential difference between Compete and a traditional spreadsheet such as Lotus 1-2-3 is that a regular spreadsheet can look at information from only a few perspectives. For example, financials can only be seen across time for one division. If a user wanted to look at financials across divisions for a specific time period as well, he would have to create another spreadsheet and link it to the first one.

With Compete, CA said, users can accomplish all of this within one worksheet by simply pointing and clicking. Compete allows up to 12 views of information on the same worksheet.

In addition to Compete and a CA mainframe database, users also need to have a PC package that actually enters the mainframe, extracts the data and then feeds the data to Compete. CA-Datacom users need CA-Dataquery/PC, and CA-IDMS users need CA-Infogate.

Observers and potential users gave the software good reviews. Dick Bailey, director of information services at McLouth Steel in Trenton, Mich., said his firm will test the software's productivity benefits by giving it to a handful of high-powered spreadsheet users, including the chief financial officer. The firm will use it to download information from McLouth's CA-Datacom mainframe database and perform sophisticated modeling in areas such as yield management.

> THE ESSENTIAL difference between Compete and a traditional spreadsheet such as Lotus 1-2-3 is that a regular spreadsheet can look at information from only a few perspectives.

Another potential user is Herman's Sporting Goods, Inc., in Carteret, N.J. "I liked the flexibility and modeling capabilities," said Laura Berger, senior database administrator, who recently saw Compete demonstrated as a database manipulation tool.

One negative point is that CA has no plans to make the product available for non-CA database systems, said George Schussel, president of Digital Consulting Associates, Inc. in Andover, Mass. Still, he added, it should appeal to the company's 5,000 mainframe database customers, about 3,000 of whom use CA-IDMS.

CA's recommended PC configuration is an 80386-based machine with DOS 3.1 or higher, Windows 3.0 and a hard disk with at least 2M bytes of free hard disk space. The per-workstation price of Compete with one of the required data-extraction tools is approximately $1,800.

ICL scoops Nokia Data for $391M

Merger seen as likely to boost Fujitsu market position in Europe

BY DON RADOLI
SPECIAL TO CW

OSLO — Britain's International Computers Ltd. (ICL) said last week it will buy Nokia Data Systems for $391 million. The acquisition will broaden the European presence of Japan's Fujitsu Ltd., which owns 80% of ICL.

Finland's Nokia Corp. conglomerate, which owns Nokia Data Systems, will take a 5% stake in ICL, receiving $85 million in cash and $306 million in preferred stock. The agreement is expected to be formally completed Sept. 30.

ICL Chairman and Chief Executive Officer Peter Bonfield and Nokia Data Systems President and Chief Operating Officer Kalle Isokallio both tried to downplay the role of Fujitsu. But the move is bound to be interpreted as a Japanese attempt to acquire European market share and distribution channels.

The merger of Nokia Data Systems and ICL will result in an enlarged European computer firm with 24,000 employees and revenue of some $4 billion.

"The merger will place the new company in the top three in the UK, Finland, Sweden and Denmark, and together with its majority shareholder, Fujitsu, in Spain," Bonfield said. "It significantly strengthens ICL's market position in Germany, France and Holland."

Nokia Data Systems must work out a new arrangement with France's beleaguered Groupe Bull, whose products it distributes in Finland. Bull is reportedly infuriated that Nokia Data Systems carried out secret negotiations with ICL while also negotiating with Bull on possible cooperation in Sweden, Norway, Denmark and Finland.

The Bull/Nokia negotiations collapsed after only two weeks. The two companies reportedly had an informal agreement not to negotiate with other companies during the five months the negotiations were scheduled to last.

Nokia Data Systems said ICL has the money while Bull is drowing in a flood of red ink (see story page 6).

Don Radoli is an editor at Computerworld *Norway.*

European stakes

Billions of dollars of business are at stake in the consolidation of the European computer market

	1990	1994*
PCs and workstations	$25.33	$37.99
Small systems	$9.83	$11.76
Medium systems	$8.06	$8.82
Large systems	$6.87	$8.09

Source: International Data Corp. CW Chart: Doreen St. John

Fast 486s

FROM PAGE 1

see a stampede [of buyers]," said Bruce Stephen, director of PC hardware research at International Data Corp. in Framingham, Mass. "This is not an absolute must-have."

For the short term, machines based on the 50-MHz chip could be useful only as servers for massive databases or for a large group of heavily used workstations, said Hilal Al-Hilali, senior section manager at Bank of Boston's integration lab in Boston.

"We're finding that our 8-bit Token Ring boards don't keep up with 386 33-MHz chips" in existing file servers, Al-Hilali said.

One manager foresees a selective market. "We have power users who'll eat up whatever machine we'd offer them," said John A. Chapman, coordinator of planning and architectural implementations at Amoco Corp. in Chicago. "But they're by no means a high-volume category."

NCR is already taking orders for its System 3447, 3450, 3550 and 3600 series, which are all file servers or larger, that will be based on the 50-MHz version of the I486 when they are released in the late third quarter and early fourth quarter of this year.

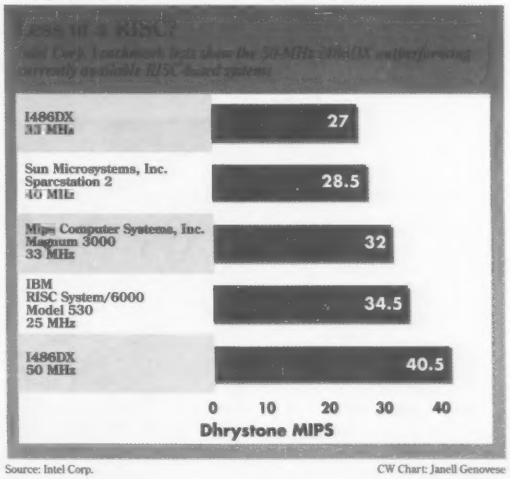
IBM, Dell and NCR have all publicly demonstrated products using the 50-MHz chip, and Intel Senior Vice President David House said IBM, NCR and Compaq were instrumental in debugging the 50-MHz chip.

IBM will not comment on a reported June 25 release date, but a spokeswoman for the firm said, "IBM is committed to bringing new technology quickly to our customers."

Dell, which is expected to release 50-MHz file servers and desktop machines as part of a line of upgradable PCs based on the Intel 486 family of processors, probably before the end of the second quarter, indicated it did not expect large initial demand for systems based on the 486/50.

Other vendors are waiting to see if a market materializes. Northgate Computer Systems, Inc. Chairman Arthur Lazere said his company would "evaluate" the 50-MHz chip but so far has found its 33-MHz cousin a tough sell for users. Sources at other second-tier compatible makers said Intel is telling them not to expect chips in quantity until December. Intel would not confirm the report.

An Intel spokeswoman said the 50-MHz chip would be aimed at PC servers and workstations. While conceding that there are currently few applications capable of taking advantage of the chip, she said, "There's always a need for speed."



Source: Intel Corp. CW Chart: Janell Genovese

Second-class postage paid at Framingham, Mass., and additional mailing offices.
Computerworld (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
Copyright 1991 by CW Publishing/Inc. All rights reserved.
Computerworld can be purchased on microfilm and microfiche through University of Microfilm Int., 300 Zeeb Road, Ann Arbor, Mich. 48106. *Computerworld* is indexed.
Back issues, if available, may be purchased through Margaret McIndoe, at $2.00 per issue, plus postage.
Photocopy rights: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Publishing/Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, 508-744-3350.
Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
Requests for missing issues will be honored only if received within 60 days of issue date.
Subscription rates: $2.00 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $130 (surface), $250.00 (airmail) a year; Europe — $195 a year; all other countries — $295 a year. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Subscriptions call toll free (800) 669-1002.

MPA ABC ABP BPA

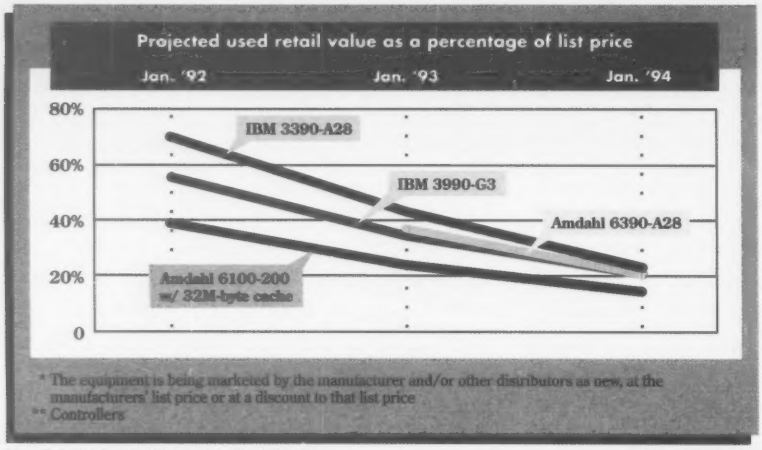
POSTMASTER: Send Form 3579 (Change of Address) to *Computerworld*, P.O. Box 2044, Marion, OH 43305.

TRENDS

amdahl IBM STORAGE

IBM's 3390 will maintain its value slightly better than Amdahl Corp.'s newly introduced 6390, which is faster

	Announced	List price	Projected retail residual value Jan. '92	Jan. '93	Jan. '94
Amdahl 6390-A28	March 1991	$212,650	New*	$78,681	$44,657
Amdahl 6100-200 w/32M-byte cache**	May 1988	$258,950	$100,991	$62,148	$36,253
IBM 3390-A28	Nov. 1989	$212,650	$148,855	$91,440	$48,910
IBM 3990-G3**	Sept. 1987	$213,690	$117,530	$72,655	$42,738



* The equipment is being marketed by the manufacturer and/or other disiributors as new, at the manufacturers' list price or at a discount to that list price
** Controllers

Source: Technology Investment Strategies Corp., Framingham, Mass.

CW Chart: Doreen St. John

INSIDE LINES

Ready to make Windows squeak

Yet another Silicon Valley software company is set to take a swipe this week at the growing market for Microsoft's Windows 3.0. Gupta Technologies, a Menlo Park, Calif., database server firm, plans to announce its first Windows-based end-user application — one that will reportedly allow managers with no knowledge of SQL to access IBM DB2 and Oracle relational databases. It's all done with graphical user interface icons, company sources say.

Only the lowly

Apple retailers are beginning to sweat bullets over reports that Apple is close to inking a distribution deal with Comp USA, a Dallas-based superstore. Longtime Apple retailers say the move would seriously drive down prices and hurt their profits, particularly with the Macintosh LC and Macintosh SI. They are willing to live with the deal as long as Apple gives Comp USA only the low-end Classic.

Celebrating Independence Week?

Employees at Silicon Graphics' Mountain View, Calif., headquarters are being asked to take the entire Independence Day week off to cut costs. The once high-flying company recently hit a dry spell for its third fiscal quarter when earnings dipped to $3.1 million, down from $8.7 million one year earlier. One antidote: a new low-cost workstation, code-named Hollywood, that is expected to debut in July or August for about $6,000.

Chippy attitude

While Intel is posing its I486 chip as a competitor to reduced instruction set computing (RISC) chips such as those made by Sun and Mips Computer Systems, Intel last week told Wall Street analysts gathered for a preview of its I860 follow-on that the 586 would be its true RISC competitor. One attendee said Intel told the group it would combine the 860 and the 486 to make the 586, which it would unveil sometime in 1992.

Pincushion

Speaking of Intel, the new I860 chip, due to be introduced Wednesday, is not pin-compatible with the I860XR introduced in 1989. A motherboard component maker said fitting the chip — which sources said holds more than 2 million transistors — onto boards holding the XR will require board redesigns. The lab coats at Intel will also integrate more peripheral components such as external memory caches into one device. An Intel spokeswoman said that with the increased transistors, it would be almost impossible for it to have pin compatibility, and it is typical for one generation of chips not to be pin-compatible with the predecessor.

Changing labels

While NCR and AT&T have had little to say about the progress of their merger talks, one AT&T reseller reports that the word from Dayton is AT&T resellers will get the green light to sell NCR boxes by the end of this month.

Emperor to get some clothes

DEC is planning to put a little beef into its Enterprise Management Architecture next week with the first network management application designed specifically for the platform, a DEC spokeswoman confirmed. DEC has taken heat from industry analysts for some time now for failing to provide any actual function modules for the so-called open architecture beyond revamped versions of its proprietary Decnet Phase IV management products.

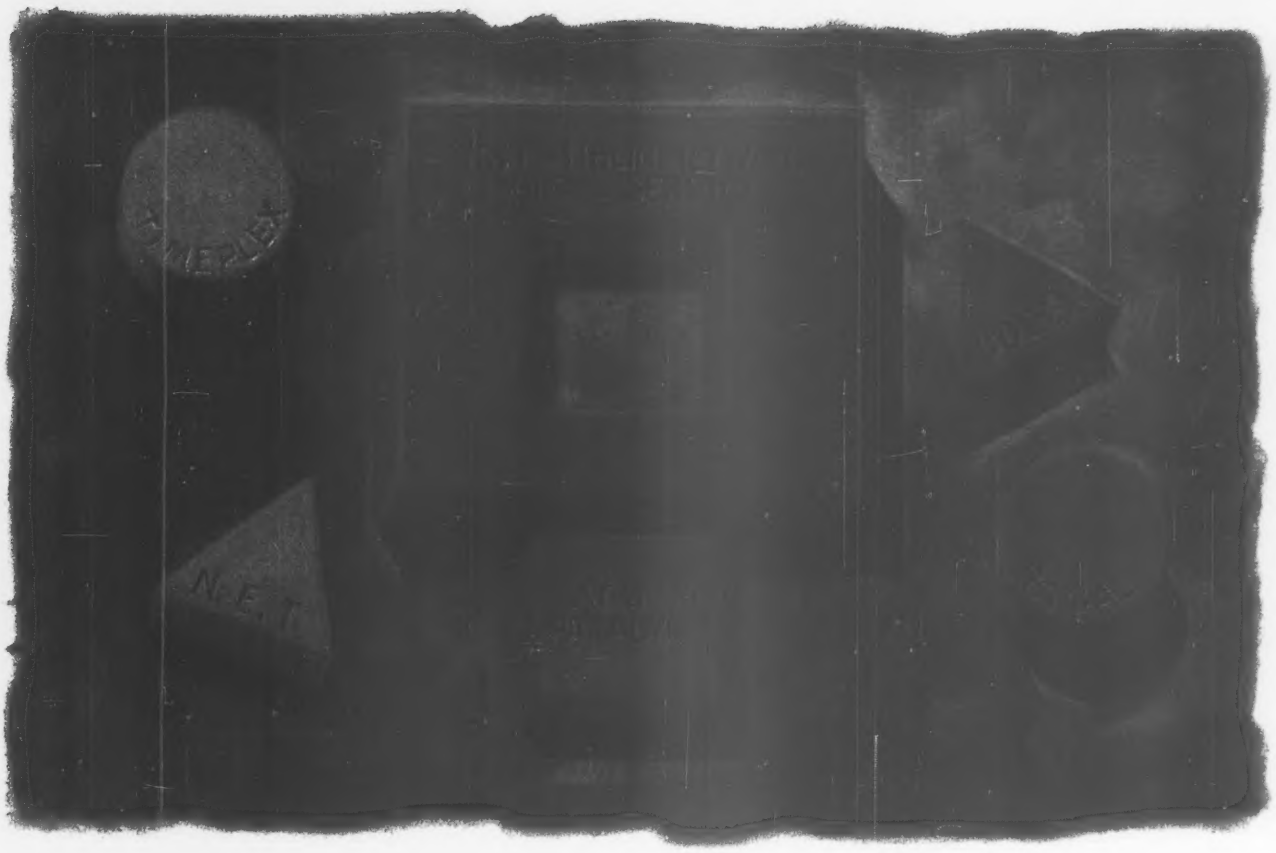
The controversy over call ID services has taken on a new twist with privacy advocates now being faced with advocates of the counterblock, or the right of recipients not to accept the call of someone who refuses to be identified. As one source puts it, "If you have the right to block the peephole when you come to my door, I have the right not to let you in." Well, we won't block you out or necessarily take down your number. Contact News Editor Pete Bartolik at (800) 343-6474, send a fax to (508) 875-8931, or address some info to our Compuserve address, 76537,2413.

NEXT WEEK

It's not all fun and games at the California State Lottery, which brings in $2.5 billion annually, making it the nation's largest lottery. **Joanne Ichimura-Hoffman**, director of information management and services, heads an operation that handles an average of 20 million transactions per day. Her profile appears in Manager's Journal.

Andy Freeberg

Without a change to existing software development processes, putting in a technology such as computer-aided software engineering is worse than worthless. In Depth will explore the need for IS to examine and revamp the process behind the technology, managing the organizational changes and quality improvements that follow.



Imagine a perfect fit between digital equipment and services.

Imagine the competitive edge you'd gain if your multiplexers were actually "designed to fit" public networks and take full advantage of their services. Imagine your savings if you could combine public carriers' services with your private network to form a hybrid network that increased your flexibility— without the need for costly additional interfaces.

AT&T Paradyne's ACCULINK™ multiplexers were developed specifically to fit public carriers' framing and formatting specifications. Our compatibility makes it easy for you to take advantage of powerful network offerings — like AT&T's ACCUNET® Spectrum of Digital Services (ASDS) for fractional T1, cost-effective Subrate Data Multiplexing (SDM), or BMS-E, for dynamic bandwidth management. And, because ACCULINK multiplexers interoperate with other AT&T Paradyne products, like the COMSPHERE™ 3600 Series DSUs, as easily as with the public networks, you gain the complete digital network solution you need to meet your strategic business goals — from one company.

So if you think the ACCULINK multiplexer sounds like a perfect fit with your requirements, call 1 (800) 482-3333, Ext. 312. In Canada, call 1 (416) 494-0453. For our **free** booklet that describes using ASDS for fractional T1 solutions, call 1 (800) 482-3333, Ext. 313. Or, fax your request to 1 (813) 530-2103.

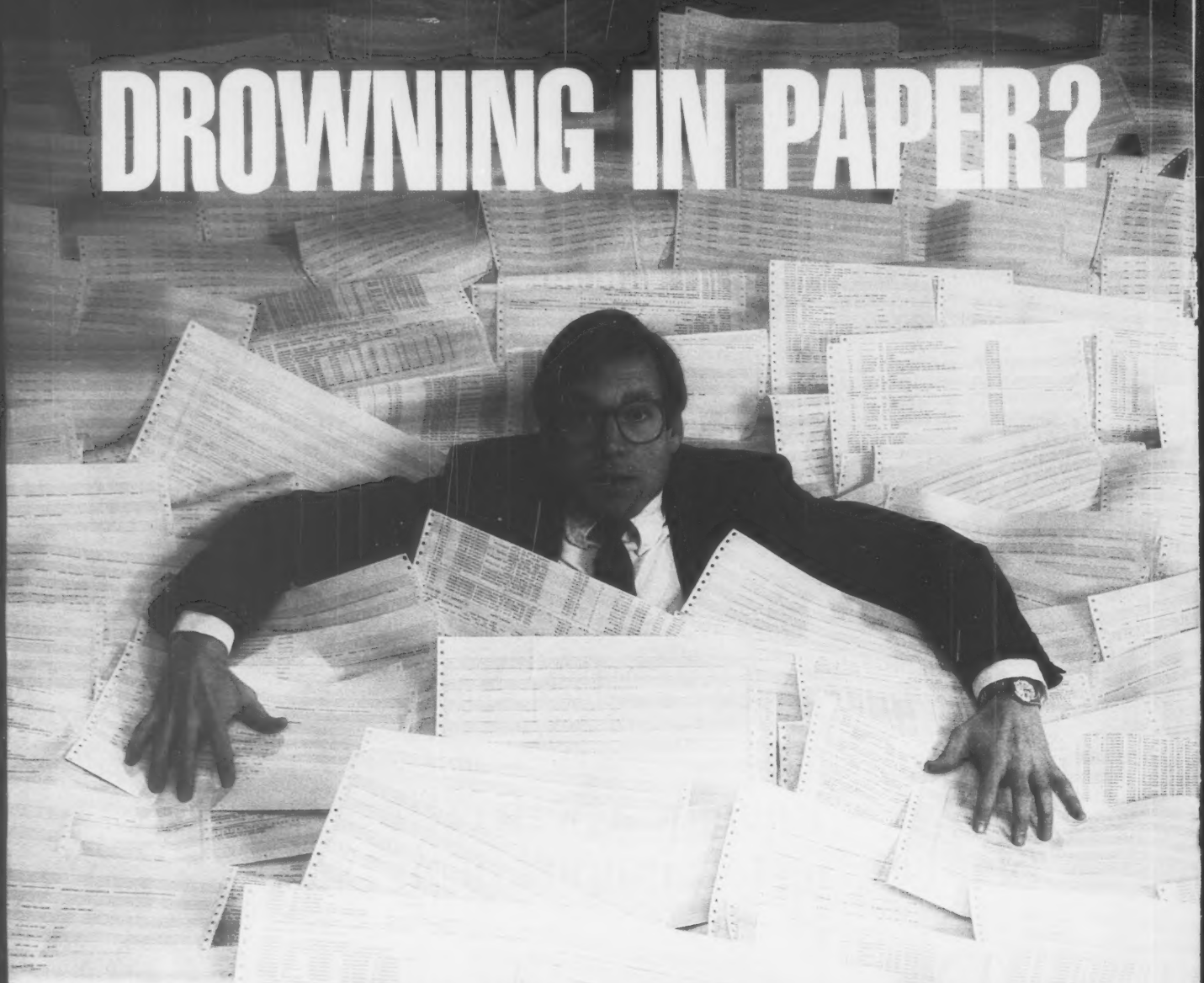
Now, imagine one company...

Visit us at ICA Booth #2412

AT&T Paradyne

©1991 AT&T Paradyne ACCULINK is a trademark, and ACCUNET is a registered trademark, of AT&T COMSPHERE is a trademark of AT&T Paradyne

DROWNING IN PAPER?



Managing the tremendous output of paper is one of today's most critical and costly concerns. Over 2,500 MVS data centers use $AVRS/TRMS individually or combined to address this issue. $AVRS/TRMS, from Software Engineering of America, provides a total solution to this expensive and resource-consuming problem. $AVRS/TRMS handles all aspects of report management/distribution, and output management, including production reports, end-user reports, JCL listings and error messages, SYSLOG, and compiles. $AVRS/TRMS is powerful, yet easy to use and is accessible to all levels of personnel through a variety of full-screen, menu-driven interfaces including CICS, ISPF, VTAM and TSO. Full cut-and-paste, windowing and PC interfaces make $AVRS/TRMS a flexible and broad-based solution. $AVRS/TRMS interfaces with all popular security systems and also has multiple levels of internal security.

$AVRS/TRMS provides a complete and cost-effective solution to all aspects of report management/distribution and output management. $AVRS/TRMS can control the paper deluge for your installation just as it has for data centers of all sizes and configurations worldwide.

For a no-obligation 45-day free trial or for further information, call Software Engineering of America at 1-800-272-7322.

SOFTWARE ENGINEERING OF AMERICA

2001 Marcus Avenue, Lake Success, New York 11042

(516) 328-7000 1-800-272-7322 Fax: (516) 354-4015

Products Licensed In Over 50 Countries